

**Treadwell Wharf in the Summerland, California Oil Field:
The First Off Shore Wells in Petroleum Exploration**

Alan Grosbard
10100 Santa Monica Boulevard
Suite 950
Los Angeles, California 90067
(310) 277-0505

Copyright © 2001 The Summerland Foundation



Treadwell Wharf in the Summerland, California Oil Field:
The First Offshore Wells in Petroleum Exploration

by

Alan Grosbard

Acknowledgement
&
Dedication

This study was made possible by the whole hearted support of Tony Thomas and the Summerland Foundation, the significant and painstaking field and investigative work of Tom Kennedy and John Lorentz of Fairweather Pacific LLC, and Steve Simpson of Marine Project Management, Inc., and by the many institutions, both large and small, which have carefully collected and catalogued records, photographs, maps, and memoirs of times past, preserving them for our investigation and use today. The author is particularly indebted to the Santa Barbara Historical Society and to the many other important institutions identified in the Bibliography.

This work is dedicated to the Mineral Resources Management Division, California State Lands Commission. Its persistent efforts since the 1950's have gradually turned an abandoned turn of the century offshore oil field into a peaceful recreational beach, whose history cannot be seen or known by anyone fortunate enough to pass the time walking its shore.

As they explore the last measures required to complete the transformation from early oil field to sunny and sandy shore line, the author congratulates the members of this California Agency. Their work for many years has demonstrated that while man can put his hand on nature and transform it for a time for his industrial needs, he can apply his efforts and intelligence with equal success to restoring it in all its beauty.

*Alan Grosbard
Los Angeles, California
April, 2001*

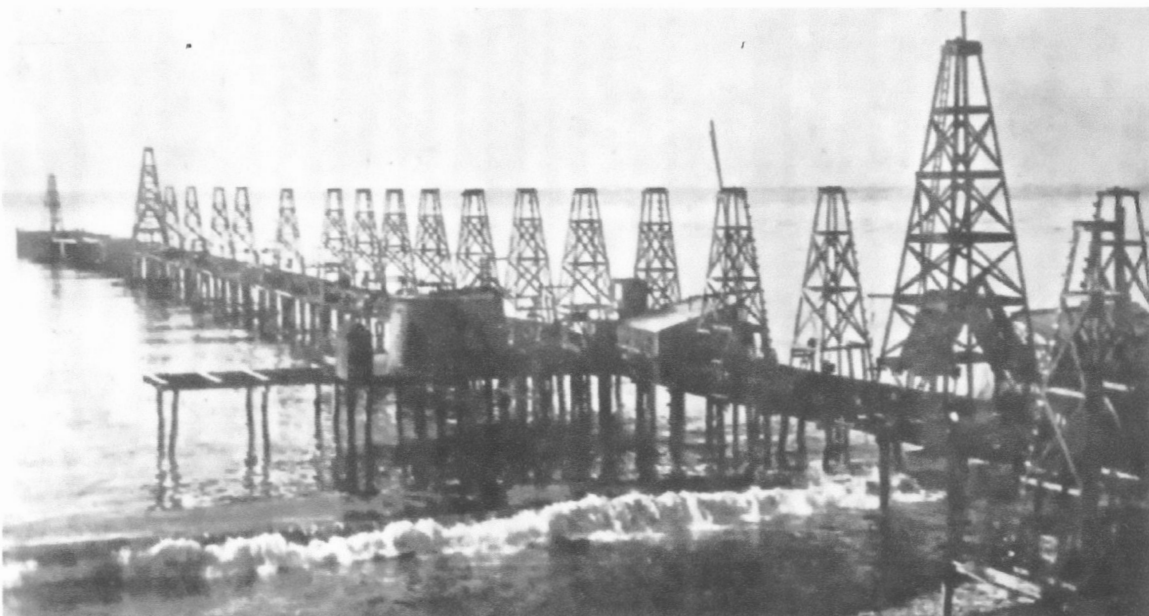
Thesis

Literature on the history of petroleum exploration often notes without attribution that Summerland, California was the location of the world's first off shore oil wells.

For example, Tom Giallonardo and Adelbert Keller in their work *Gaviota Offshore Gas Fields*, California Division of Oil and Gas Publication No. TR21 (1978) write: "In the 1890's, the world's first offshore oil was produced in Summerland oil field by wells drilled from piers extending into the Santa Barbara Channel."

Similarly, in a study by Centaur Associates, Inc. funded by the Pacific OCS Region, Minerals Management Service, U.S. Department of the Interior under Contract No. 14-12-0001-30026 (August, 1984), the authors note "In 1896 [sic], water well drillers at Summerland struck oil around 100 meters (few hundred feet) below the surface. Within 10 years, the coast at Summerland was virtually obscured by piers that jutted out over the water and supported derricks and pumps. These were the first offshore oil wells in the world, and the beginning of the offshore industry in the Santa Barbara Channel area."

The purpose of this paper is to examine the thesis: to identify from the available evidence whether the Summerland off shore wells, and in particular the wells constructed on the Treadwell Wharf in the Summerland Field in Spring and Summer of 1898, were the first off shore wells in the history of petroleum exploration and to study in detail the construction, operation and ownership of these wells.



Treadwell Wharf

"Southern Santa Barbara County" published in 1900
by The Summerland Advance-Courier

The discussion is accordingly divided into the following topics:

1. Early Oil Exploration Around the World
2. History of Off Shore Wells
3. Development of On Shore Oil Exploration at Summerland Field
4. Treadwell Pier at Summerland Field
5. Construction of Wells on Treadwell Pier
6. Ownership of Oil Reserves at Summerland Field
7. Later History of Summerland Field
8. Ownership of Treadwell Pier and its Wells
9. Conclusion

Early Oil Exploration Around the World

In 1852 the Canadian physician and geologist Abraham Gessner (1797-1864) obtained a patent for producing oil for lamps from crude oil. Until then, either wood, coal, whale oil or oil produced from coal had been used to fuel lamps, stoves, and machinery of every kind. Converted crude oil would be a cheaper and more plentiful fuel, an item of great value in the rise of the industrial age.

In 1855 the American chemist, Professor Benjamin Silliman, Jr. (1779-1864) of Yale University published a report indicating the range of products that could be derived from distilling petroleum. Professor Silliman had been given samples of "rock-oil" (petroleum) by the American industrialist George H. Bissell (1821-1884).

Commercial exploration of petroleum soon followed.



Drake Well 1866

Edwin Drake is standing on the right. The well was reconstructed at this time for display. Drake Well Museum, Titusville, Pennsylvania

The first well was in all probability dug in Germany in 1857, a second in Italy. Yet all of the fame has historically been given to a well dug near Oil Creek, Pennsylvania (named for its natural "creek" of oil) in 1859 by the retired railroad conductor Edwin Laurentine Drake (1819-1880).

In 1859, Drake was in Titusville, Pennsylvania. There he leased land near Oil Creek from George H. Bissell, the industrialist who had encouraged Professor Silliman's studies of rock oil, for the purpose of drilling for oil. Drake hired William Smith, an expert salt driller, to drill for oil. Smith used the technique that had previously been used to drill for salt brine.

With an old steam engine to power the drill, Drake drilled to a depth of 69.5 feet. At this level, on Saturday, August 27, 1859, Drake tapped a paraffin type petroleum which flowed and distilled easily. At first, the oil which Drake produced sold for \$20 a barrel. It is reported that the well produced 30 barrels a day.

Drake did not patent his drilling method, which was soon copied in a variety of locations. Initially, the profit to be made from drilling was extraordinarily high. By the end of the year, U.S. production reached 2,000 barrels for the year.

Less fame has been attached to the discovery of oil in Lambton County, southeastern Ontario, Canada. The history of the Canadian field is typical of early oil discovery. The county seat, Sarnia-Clearwater, became over the course of many years a major petroleum center. Peter McKenzie-Brown, Gordon Jaremko and David Finch, explain:

"Exploration in Lambton County quickened with the discovery of free flowing oil in 1860. Until then, hand pumps coaxed oil from the ground. But the first gusher blew in on February 19, 1862, when Hugh Nixon Shaw struck oil at 48 metres. For a week the oil gushed unchecked, coating the distant waters of Lake St. Clair with black film. Dr. A. Winchell, in his *Sketches of Creation*, refers to the event in these words:

"Though Western Pennsylvania has produced many flowing wells of wonderful capacity, there is no quarter of the world where production has attained such prodigious dimensions as in 1862 upon Oil Creek [again named for its natural "creek" of oil] in the Township of Enniskillen, Ontario. The first flowing well was struck there January 11, 1862, and before October not less than 35 wells had commenced to drain a storehouse which provident nature had occupied untold thousands of years in filling for the uses of man...'

Within a few years the wells were producing mostly salt water and the boom moved eight kilometres north, to Petrolia. Crews drilled ten thousand wells there, a rail line replaced the oxen trails and a pipeline carried oil to the refineries and docks at Sarnia.

Although the industry in Central Canada began with a promising start, Ontario's status as an important oil producer declined rapidly. Canada became a net importer of oil during the 1880s, and dependence on neighboring

Ohio for crude oil increased following the arrival of Canada's first automobile in 1898."

In the 1860's, petroleum exploration boomed in Western Pennsylvania. So much oil was produced in the area, that the price of oil plummeted from 20 dollars to 10 cents a barrel. Within 10 years, Drake himself was impoverished. A pension from the State of Pennsylvania, awarded him by its legislature, supported him for the remainder of his years.

In the early 1860's, the oil boom transformed western Pennsylvania and parts of West Virginia.



Early picture of part of Petroleum, West Virginia oilfield from 1860s. Note the cable tool rigs and storage tanks.

Oil & Gas Museum, Parkersburg, West Virginia

Certain of the Pennsylvania oil men turned their attention to California, due to the discovery of similar formations of surface oil seepage in a number of California counties.

Professor Silliman of Yale was hired by Colonel Thomas A. Scott, vice president, and J.E. Thomson, president of the Pennsylvania Railroad, in the Spring of 1864 to examine potential petroleum producing areas in California. The men were looking for areas of surface oil seepage that closely resembled the Pennsylvania crude fields. Among other areas, Professor Silliman investigated seepages and soil formations in Ventura County.

Eventually, the Scott group bought nearly 265,000 acres in what became Ventura County, and another 12,000 acres in Los Angeles and Humboldt counties. While the Pennsylvania oil men found surface seeps similar to those in Pennsylvania, the irregular

oil bearing formations in California proved much more difficult to tap than those in Pennsylvania.

Between 1859 and 1874, the United States provided 90 per cent of the world's oil. In 1873, the Baku Fields in Azerbaijan (then part of the Czarist Empire of Russia, later part of the U.S.S.R., then after 1991 the Azerbaijan Republic) were first explored.

In the 1880's, oil was discovered in the United States in Kentucky, Ohio, Illinois and Indiana, while in Europe it was discovered in Poland and Romania.

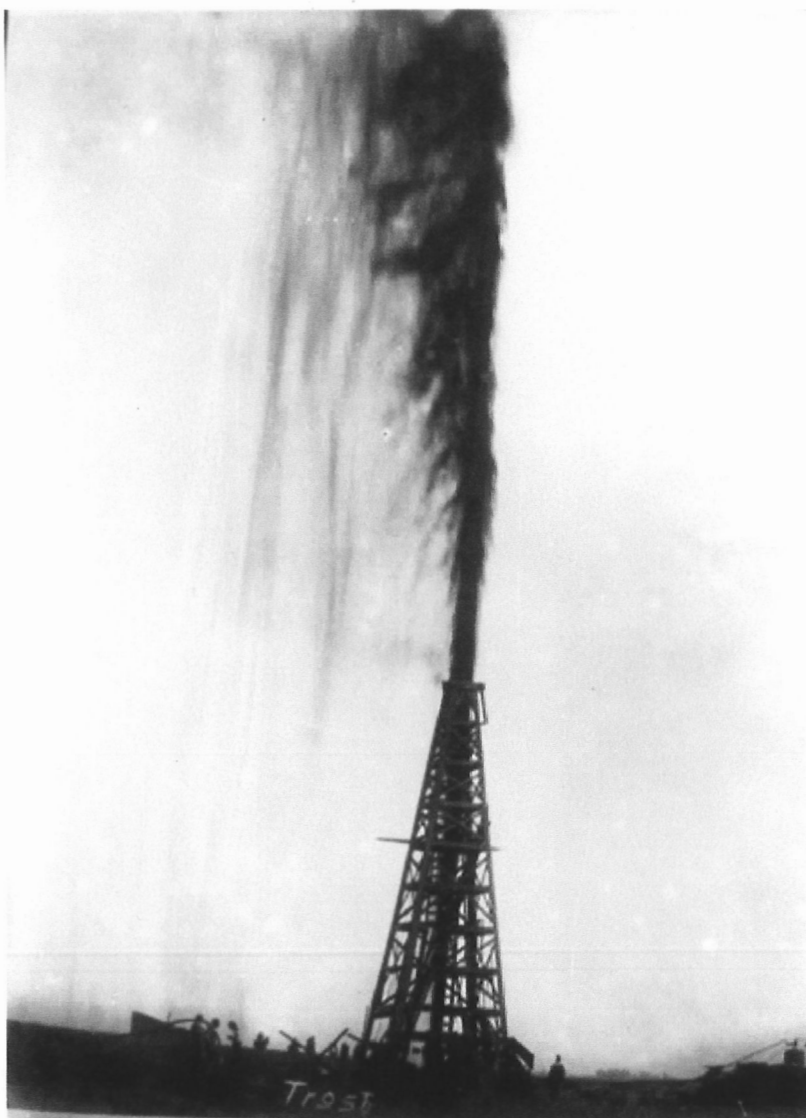
In the 1890's, California and in 1901 Oklahoma too joined the significant oil producing states in the U.S. Peru, Germany, Venezuela, India at Digboi, Sumatra (Indonesia), Japan, Trinidad, Mexico and Argentina joined as oil producing countries.

California holdings and those of other Pennsylvanians who had migrated to California were eventually formed into the Union Oil Company incorporated in 1890, headquartered in Santa Paula, California. [The offices have been restored as part of the California Oil Museum. The Museum is one of several across the country which displays a restored cable tool rig.]

The United States developed from the volume produced by Mr. Drake and his contemporaries of 2,000 barrels a year in 1859 to 64 million barrels a year in 1900.

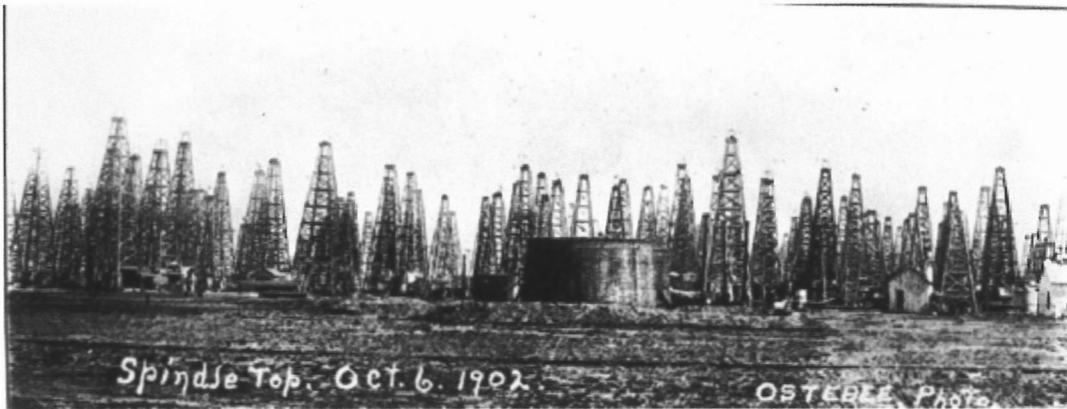
But in the narrow time between 1898 and 1901, the Baku Fields in the Azerbaijan region led as the world's leading oil producer. In 1901, Azerbaijan produced 84 million barrels of oil, accounting for half of the world production. The Baku Fields serve an important element in our narrower inquiry, discussed below.

The discovery of oil at Spindletop near Beaumont, Texas in 1901, returned the United States to world wide domination of oil production for many years.



Lucas Gusher, 1901, Spindletop Field, Texas
Texas Energy Museum, Beaumont, Texas

When the Lucas Gusher at Spindletop Field blew in on January 10, 1901, the huge volume of oil it produced revolutionized the oil industry. Spindletop Field put Texas on the global map of oil production at a time when steam ships, locomotives, and manufacturing plants were all demanding fuel. The automobile industry had just been born.



Spindletop Field, October 6, 1902
Texas Energy Museum, Beaumont, Texas

The first important oil discoveries in the Middle East occurred in Persia (Iran) in 1908, Iraq in 1927, and Saudi Arabia in 1938 at Dammam Well Number 7. In this same era, in the United States the Signal Hill Field in California was discovered in 1921, at Shell Oil Company's Alamitos No. 1.



Signal Hill Field, Los Angeles, California, 1932
Atlantic Richfield Company

The explorers began with seeps of oil on the surface, at locations already named by the locals for the black tar and oil with names of Oil Creek, Oil Springs, Oil Creek Canyon. If the oil had dried, it was called asphaltum. A well known example is the La Brea Tar Pits in Los Angeles, California.

Then on the scene was the geologist, who hoped from the formations of hills and valleys, locations of surface seeps, and core samplings from nearby wells, to be able to determine where a reservoir could be found at a drilling depth available at the time.



Oil Prospectors first dug open pits in areas where asphalt cropped to the surface. William Warren Orcutt is on the right. He became principal geologist for the Union Oil Company, headquartered in Santa Paula, California. Orcutt later founded the oil town of Orcutt, California.

Kern County Museum

Then the drillers went to work. They copied techniques for digging water wells, salt brine wells, even ore mines. They brought machinery to the sites. Machinists and machine shops became an important contributor to the exploration. They had to cope with casing that broke, cable tools that were lost down the hole and had to be "fished out", dry wells, pockets of gas, injuries, and the constant risk of fire.

From the start, every drilled well was a calculated gamble to make money. First, add up the likelihood of finding oil, the cost of drilling, operating and safe guarding the well, and acquiring oil rights if anyone was around who had to be paid. Add the cost of transporting the oil to a market where it could be refined and sold. Add the distance to a customer in an urban or commercial center. Then speculate what the price for oil will become while the well is producing.

Only after the well was dug and operating, and oil was coming up in sufficient volume to make the project work, in fact only after the contract was signed and the oil was in transport, could the oil speculator know for sure that the gamble had paid.

On the North American Continent, from California to Pennsylvania to Vancouver, across the European, Asian and African continents, because of these risks, all drilling was done on land. The level of risk undertaken in drilling and operating a well on land was

high. The cost and challenge that drilling off shore would add to the equation meant submarine wells would not pencil out in any speculator's mathematics.

Maybe with one or two exceptions.

History of Off Shore Wells

Through the end of the 1800's, there was little science, beyond the surface formations of the soil, pooling of oil and tar at the surface and analysis of corings that could reliably predict whether a well would be productive.

The Pennsylvanians, for example, who had so much success drilling in the 1860's where they found surface seepage, discovered in California that when the geology had formed the earth's surface under different patterns of pressure, surface oil was just on the surface. The reservoir could be a good distance away at an unreachable depth. A 100 foot well at a surface seep produced oil in Pennsylvania. In California it produced dirt and rock.

The gamble of drilling for oil on land was a great one. Adding the problems of drilling through a river, a lake, or even worse into the bed of an ocean, was a risk and challenge that no speculator took on for nearly forty years after the first commercial petroleum exploration.

It is ironic that when the next step to drill off shore was first considered, there were two groups who faced the challenge at the same time on either side of the globe.

They were connected only by a single magazine which reported on them both, preserving a record for history, Scientific American then published weekly in New York City, New York.

One group was in Summerland, California. They were at first a small number of independent men, some formed into thinly capitalized companies, looking for oil in hopes of boosting local land prices. They had all participated in a land investment which was in serious financial trouble. After discovering oil on their lands, they were soon joined by oil men from Los Angeles, whose companies evolved into corporate names familiar today: Chevron Corporation which is soon to become ChevronTexaco Corporation, Oxy Petroleum Corporation and Phillips Petroleum Company.

The second group was the government of Czar Nicholas II, Emperor of the Russian Empire, which hoped to exploit what were believed to be vast resources of oil in the Caspian Sea portion of the Baku Field in Azerbaijan. The Baku Field was operated primarily under contract with the Nobel Brothers Association, better known to us today as the founders of the Nobel Prize.



Oil Production at the Baku Fields by the Nobel Brothers Association, 1900.
Russian Empire in Photographs, URL: <http://all-photo.ru/empire/index.en.html>

Keeping an eye on these two different groups was the respected journal *Scientific American*. Today we would call it a breaking story. Given the constraints of travel and communication, at the turn of the century *Scientific American* covered the story for 5 years before it reported who had won the contest for the first off shore wells in oil exploration and how they managed to do it.

The first article appeared in *Scientific American* on November 27, 1897:

"Boring Oil Wells at Sea

The early settlers in California were familiar with the indications of oil, which were common at various localities up and down the coast and the asphaltum from beds in the sea, where the product oozed up out of the bottom, formed an important factor in the household economy of the ancients. In almost every burial place on the coast asphaltum is found. The natives employed it to mend objects which were broken and as a base in which to place ornamental pieces of pearl mosaic; baskets were fastened to ollas by this means, and it was used for endless purposes in lieu of nails, cordage and glue. The natives on the islands obtained their supply from the water and today the rocks at various places can be seen splashed with asphaltum which has drifted in. This is particularly noticeable after an east wind, showing that there is a area in the deep Santa Catalina channel from which asphaltum oozes up. Off Redondo Beach, Los Angeles County, it is extremely troublesome, oozing out of the sand offshore and

drifting in. Between Santa Monica and Los Angeles there are undoubted deposits, and north of Santa Barbara several enormous ones. That owned by the More estate extends some distance alongshore, so that vessels run in and the asphaltum is shoveled aboard. The quality, it is said, is quite equal to that of the famous Trinidad variety.

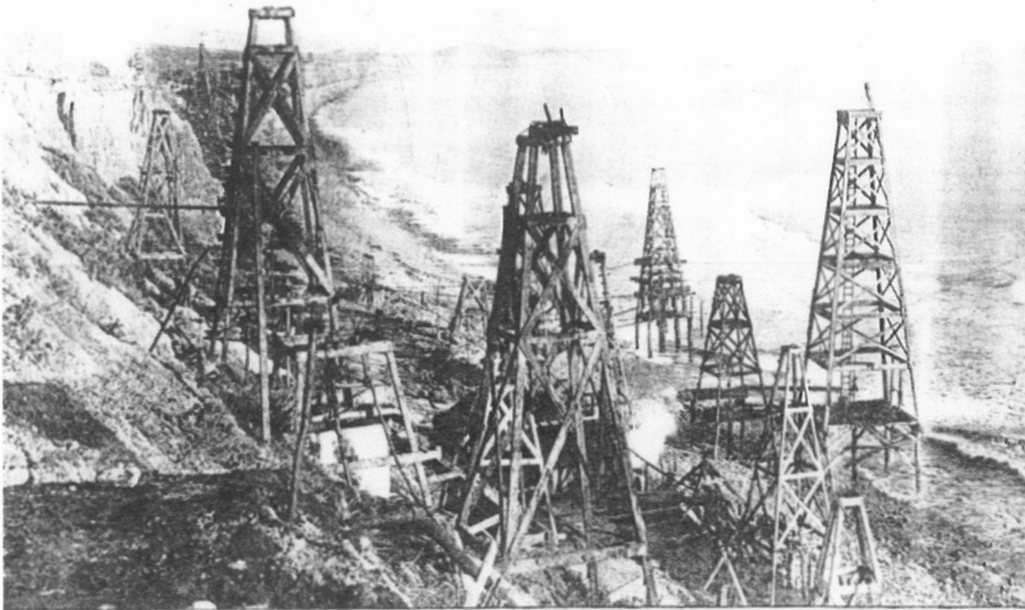
At Santa Paula, oil wells were long ago developed and later the oil producing belt was found at Puente and again at Summerland below Santa Barbara, where a singular state of affairs may be seen. That the oil bearing strata reached out into the ocean soon became apparent at Summerland and the drill scaffoldings, looking like windmills without the wheel, began in a short time to extend down the little canon which they had filled and to creep up the shore in the direction of Santa Barbara. At first, as shown in the accompanying illustration, they kept along the sides of the hills which breast the ocean here, but gradually they turned seaward, until one more adventurous than the rest rose from the water. The work was started at extreme low tide and finally the tall scaffolding appeared twenty or thirty feet from shore, seemingly rising from the sea.

The illustration below shows the location of three wells which at low tide are in the water and at flood tide are completely surrounded, the men working on platforms of various heights which they ascend when working as the sea rises. The structures that are built in the sea have not yet experienced a strong southwester, and it is assumed by some that there will be a fall in oil when a heavy sea begins to break against the scaffolding. The drill is worked in the water by an engine on the beach, the fuel being the oil pumped up: this engine working several wells. At present the most daring well scaffolds stands in six feet or more of water at high tide, and there is rumor that others will be pushed out into the shallow water near the kelp beds. This is probably the only place where oil is pumped out of the ocean. Undoubtedly the entire coast in this vicinity overlies an oil producing stratum. Off what is known as Moore's wharf, half a mile out, oil rises to the surface in several places. A spring of water also rushes up here with such velocity that it can be taken up and used if one does not mind a slight inter mixture of salt. A similar spring is known on the Florida coast where it is said that a vessel can

lie alongside the great rush of water and fill her tanks with fresh drinking water out of the ocean.

...
The discovery of oil in and about Los Angeles bids fair to revolutionize certain lines of business and promises to produce the long wished for power for manufactories. The Terminal Railroad has adopted the oil as fuel and the Southern Pacific is said to be experimenting in the same direction.

California is without deposits of coal, if we except lignite beds, which crop out in various places so that oil, as fuel, will supply a long felt want and become a factor in the rapid development of this growing city."



OIL WELLS ON THE SEA SHORE NEAR SANTA BARBARA. CALIFORNIA.

Wells On Shore, constructed in the high tide zone, Summerland Field
Scientific American, November 27, 1897

The magazine followed this story with its next coverage 4 years later on September 14, 1901.

"Submarine Oil Beds

For some time past the Russian authorities have been exploring the petroleum producing country round Baku and the result these investigations has substantiated

the hypothesis of experts that these naphtha beds are not only to be found at Baku but they extend for some distance beneath the sea. An attempt to utilize these submarine resources is seriously contemplated, especially on the coasts of Bibl-Elbat and the Island of Swjitol. The depth of water at the former place ranges from 14 to 50 feet and at the latter to about 39 feet. The most serious problem that confronts the government is how to tap these submarine deposits without endangering the land supplies and public property and life. The plant, such as reservoirs, pumping stations and power stations must necessarily be similar to those employed on shore. The difficulty of transporting the naphtha is very complex. Small boats would not be employed owing to the large quantities of sand which the fountains invariably throw up, while the utilization of steam vessels in a naphtha atmosphere would be fraught with considerable danger. The only means of solving the problem is by closing the sea with a sea wall but as such a reclamation scheme could only be undertaken at tremendous expense and as the value of the oil beneath is purely suppositions both in quantity and quality, the completion of such elaborate works might prove unrenumerative. As a tentative effort to discover the value of these submarine deposits, the government suggests that Romany Lake, one of the centers of Baku, should be laid dry and the soil tested. Several petroleum firms have made offers for this concession, but as none of them has been deemed sufficiently high, the government intends to empty the lake at its own expense and to let the area thus recovered in the usual way. If the experiment should prove successful and the oil sufficiently rich and abundant, the other schemes would then probably be undertaken."



E.L. Nobel of the Nobel Brothers Association with Workers from the Baku Field. The Nobel Family was the principal petroleum firm to explore and develop the Baku Field. They are better known today for having established the Nobel Prize. Russian Empire in Photographs, URL: <http://all-photo.ru/empire/index.en.html>

A keen reader of Scientific American, who had followed the story now for 4 years, would not yet know whether the independent operators in Summerland, California or the Czarist government which owned the fields in Azerbaijan first had drilled off shore.

In the January 18, 1902 edition of Scientific American, the story was finally broken 4 years after the outcome.

In a story captioned "The Drilling of Submarine Oil Wells As Performed at Summerland, California," the magazine informed its readers:

"At Summerland, Cal. there are almost one hundred submarine oil wells in successful operation, and as many more wells scattered along the beach between the limits of the highest and the lowest tides. The wells farthest from the shore are in from 15 to 25 feet of water at low tide. The method of drilling these wells as compared with the gigantic projects proposed for reclamation by walling off the sea on the coasts of Bibl-Elbat and the Island of Swjitol or the draining of Romany Lake at Baku for the purpose of drilling petroleum wells is simplicity itself."

The fields of Azerbaijan in the Caspian Sea were never explored by the Czarist Government. The enormous off shore field, which is still in significant production today, awaited techniques of the second half of the twentieth century. The bids received by the department of the Czarist government, likely reviewed by the Agricultural Scientific Committee of Ministry of State Property, were not deemed satisfactory.

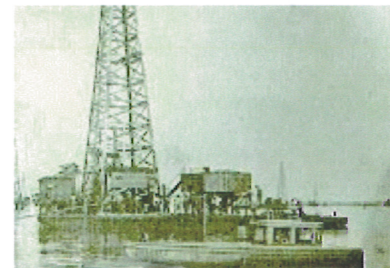
In contrast, the Summerland Field proved to be a relatively small field, operating wells at 1.03 barrels per day by the time of the October Revolution, when Czar Nicholas II and his family were executed on July 17, 1918.

To place the Summerland Field in the context of time, and to demonstrate just how far ahead it was of all other submarine oil exploration, we will look at the second off shore field in petroleum exploration.



Caddo-Pine Island Oil and Historical Museum
Oil City, Louisiana

About 20 miles north of Shreveport, Louisiana, the oil fields of Louisiana had a population of 25,000 people by 1910. That enormous population was there to drill oil from substantial shallow reservoirs. It was only in 1910, when all of the land in the region had been leased for oil exploration, that Gulf Oil decided to develop a field extension onto Caddo Lake, creating in May, 1911 drilling platforms over inland waters, the first of which was Ferry No. 1 in the Caddo-Pine Island Field.



First Inland Drilling Platform, located in Lake Caddo,
Louisiana, 1911
Caddo-Pine Island Oil and Historical Museum, Oil City,
Louisiana

In California, after the Summerland Field, the next off shore exploration occurred in Elwood Field in Santa Barbara County, 12 miles north of Santa Barbara, in 1929. Off shore wells were also developed in Huntington Beach in Los Angeles County and at the Rincon Field in Ventura County at the same time, the result of the State of California passing its first tidelands leasing act in 1921, authorizing the Surveyor General to issue prospecting permits on state owned tide and submerged land.

Instead of the wooden piers of the Summerland Field, these piers were built with steel pilings and reinforced concrete filled caissons. The field included a "steel island," built in 1932 by the Indian Petroleum Corporation, highly innovative for its time.



Ellwood Field in Santa Barbara County
California Division of Oil and Gas

In the 1930's, a submersible drilling barge was developed by Louis Giliasso. It allowed drilling equipment to be towed to a well site, anchored in place, and a temporary well drilled off shore. Once completed, the equipment was re-floated and towed to the next site.

As a side note, the Elwood Field drew additional fame when it was the target on February 23, 1942, of 13 rounds of 5 1/2 inch shells fired by a Japanese submarine against Elwood 89 from a range of 2,500 yards. This attack and a salvo against a coastal target in Oregon also during WW II were the only attack against the continental United States other than the War of 1812.



Rincon Field, Ventura County, 1938

Note the well in the foreground which is a free standing platform.
Standard Oil Company of California

In 1947, the Kerr-McGee Corporation developed center-well drilling ships which could be anchored in place, sink a well, and move to another location. This allowed wells at much greater depths, wells out of sight of land. The first of these floating rigs were used for off shore drilling in the Gulf Coast. They soon were applied in major off shore fields around the globe, including the Baku Fields, the North Sea Fields, and indeed the off shore fields in Summerland, California which are situated 3 miles from land and tap a different reservoir than the Summerland Field.

Petroleum literature sometimes generically refers to the Gulf Coast platforms of the late 1940's as the first off shore wells. As we have seen, they followed the first off shore wells of the Summerland Field by half a century.

If we focus on the history of the Summerland Field, we find that its unique society, economy, geography and technology made it a logical place for off shore oil exploration years before the process would be used elsewhere. Local history corroborates the exact dates of the Summerland submarine wells, tells us which of the wells were dug first, and give us the information on how the local drillers managed to drill their submarine wells decades before the practice became universal.

Development of On Shore Oil Exploration at Summerland Field



Summerland Before the Oil Wells, circa 1890. Note the Spiritualists Tents.
Santa Barbara Historical Society

Henry Lafayette Williams (1841 - 1899) began the Summerland venture when he purchased the Ortega Ranch (the land known today as the Town of Summerland, California) on April 11, 1883 from Burkill Jacques, who had used the land primarily to raise sheep. It was located just 5 miles south of Santa Barbara on the Southern California coast line. The land consisted of nine parcels aggregating 1049.88 acres. The purchase price was \$17,000. Williams paid \$5,000 in cash and pledged the land for a \$12,000 mortgage.

Williams' plan was to found a colony of "Spiritualists", a religious and metaphysical movement of the time, which existed in both America and Europe. His wife was a member of the movement, to which he converted.

In March, 1887, while waiting for investors to help him, Williams re-financed the land with San Francisco Savings Union. This time he secured a mortgage of \$35,000.

The following year, on December 18, 1888, Williams recorded a town site plat for Summerland with the Santa Barbara County Recorder.

After several failed beginnings with others, Williams undertook the venture alone, offering for sale individual 1,500 square foot lots (25 x 60 feet), suitable for tents, for \$25 each. 4 lots were required to build a structure. Southern Pacific Railroad had already connected the Ortega Station with Los Angeles by rail in 1887. October 11, 1889, Summerland itself became a location where trains would stop on a flag signal.

Spiritualists came to visit, but only a small group settled there. The number of lot sales dwindled to a point where it was not sufficient for Williams to pay the mortgage he had pledged and the many costs of improvements. There were several instances in which Williams had to borrow money to pay the interest due to keep from defaulting on his mortgage.

In 1887, Williams drilled the first oil well at Ortega Hill. Drilled to a depth of 455 feet, it failed when there was a parting of its casing. A second well was drilled, found oil sand, but proved not productive and was abandoned after a short time.

Locally, a small natural oil spring at the mouth of one canyon inspired the locals to name it "Oil Spring Canyon" (similar to Oil Creek in Titusville, Pennsylvania, and Oil Creek in Ontario, Canada).

Occidental Petroleum and Mining Company (today's Oxy Petroleum) hit oil in Oil Spring Canyon in late November, 1889, and created a well that produced 5 barrels a day. Although 5 wells were dug, by 1895 only one was operating, producing a few barrels of oil a day.

May Lambert recalled in her book *Growing Up With Summerland*, Carpinteria Valley Historical Society (1975):

"When we arrived in Summerland in 1890, there were only a few permanent buildings. Also, there were quite a few tent houses, some occupied by people who later built homes, and others by people there only temporarily. The town site was laid out, only the year before, by H.L. Williams, who owned the entire Ortega ranch. He planned it as a Spiritualist colony, and most of the early settlers were of that faith, as was Williams."



Summerland, circa 1888. The white tents of the Spiritualists are seen along with the early structures.
Santa Barbara Historical Society.

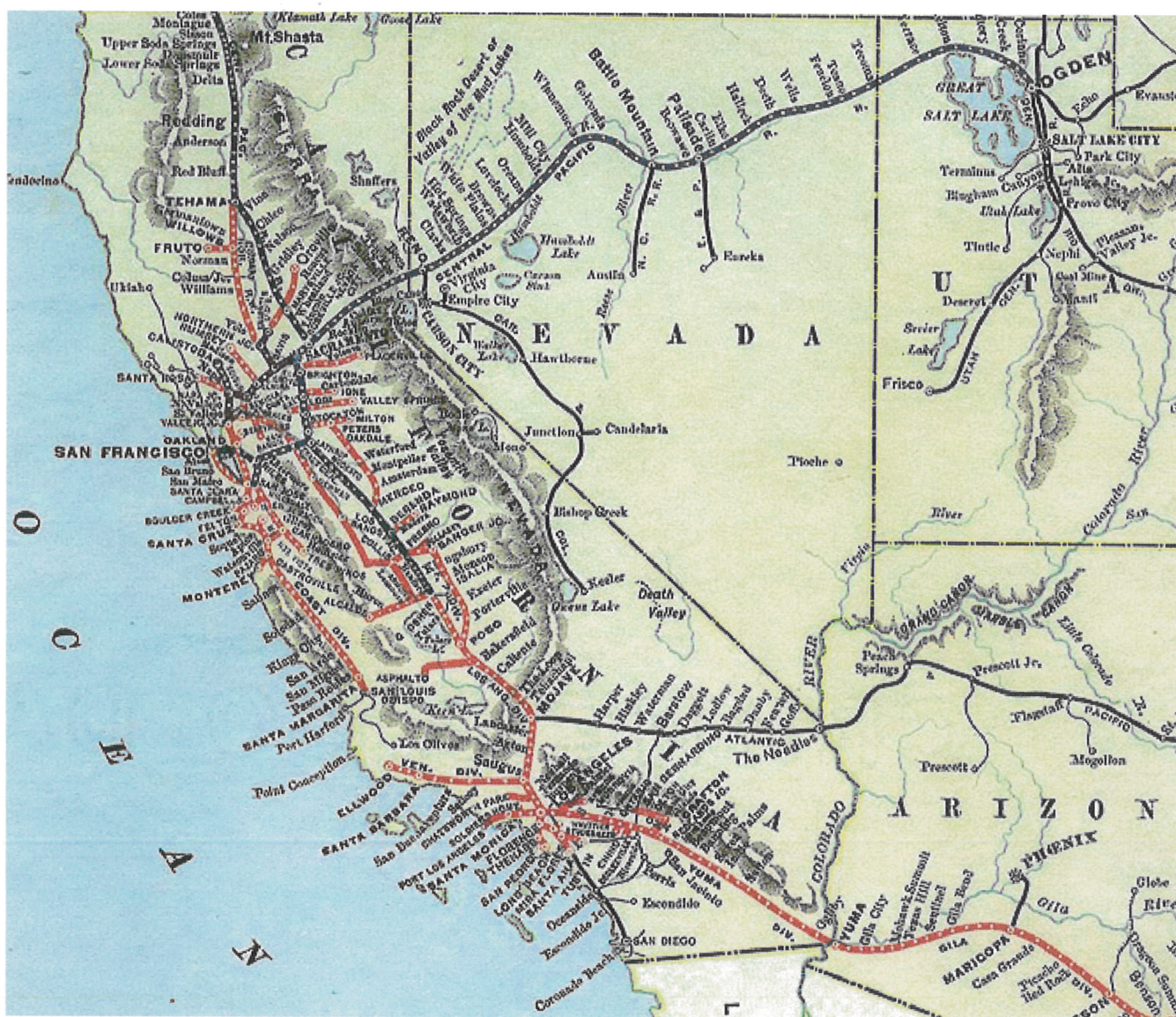
In 1890, there was a railroad leading to Los Angeles and to Santa Barbara. There were 10 houses and 27 tents. Buried in the earth below, there was gas and there was oil.

May Lambert vividly describes the scene.

"There was natural gas in the ground in many parts of town. My brothers and other children used to go out after supper and play baseball along what is now Lillie Avenue. When it began to get dark, they would drive short pieces of pipe into the ground about five or six inches, and would light them, and there would be a gas flame a foot high from the top of the pipe.

Fifteen or twenty of these pipes along the edge of the road gave plenty of light for them to play after dark. When they got called in to go to bed, each had a flat board and they would whack the board down over the flame and out it would go. People didn't care if they used these flares and they didn't have to pull the pipes up, as there wasn't much traffic."

The Darling Brothers dug a gas well in 1891 to a depth of 104 feet. They completed a second well in 1892. The 2 wells were used for their homes and those of 10 other families.



Map from the Southern Pacific Railroad Annual Report, 1894
Note the rails had only gone as far north as Elwood.

On March 15, 1894, the Santa Barbara Press announced that Smith L. Cole began boring a two-inch hole in his backyard about 75 feet from the Southern Pacific tracks, adjacent to the sea. At 90 feet, he struck a gusher of oil that spouted 40 feet into the air. "This was so encouraging a four-foot well was at once begun which already has a depth of 40 feet, with the brightest prospects that it will prove a veritable bonanza to its lucky owner."

These efforts were further motivated by a local population which was not going to be able to sustain itself on the original plan for a Spiritualist community. As that plan failed, the search for oil widened.



Detail of Santa Barbara County, 1895

Note that the Town of Ortega is identified. It was a platted town. While its railroad station was built, the town was not. Summerland is not identified.

U.S. Atlas, 1895

March 21, 1894, Williams wrote the following in a letter to Lovell White, Cashier of the San Francisco Savings Union, his mortgage holder:

"I have had a big load of debt to carry. I started a town which invited a lot of cranks to it who have fought me in every way possible, until I have been forced to abandon the idea upon which the town was founded to get rid of them. The recent discovery of oil in the town is going to create some excitement and demand for lots and land, this with early completion of the gap in the S.P.Ry. [extension of the Southern Pacific Railroad which would then connect Summerland to the rails all the way north to San Francisco]

making or placing my property on its main line will enable me to pull out nicely within the next 18 months ..."

After nine (9) years of struggling with his land development, Williams again joined the oil explorers in 1894. He drilled two (2) productive wells on the sand of the Summerland beach, one in June, one in December.



H.L. Williams (at left) at one of the first wells drilled on the sand in the Summerland Field.

Santa Barbara Historical Society

In 1895, Williams drilled a third well on the sand that showed oil at the 455 foot level. The well was lost when the casing broke. At the same time, a storage tank was built on the bluff for loading oil into rail cars. The storage tank required a steam pump to move the oil from the wells to the higher elevation of the bluff.

Williams then raised the price of lots from \$25 to \$100. In the month of October, 1895, he offered a special sales price of \$75 and guaranteed to buy back the land in 3 years if the purchaser didn't find oil after drilling 1,000 feet. Since the wells at that time were being drilled to an average of 60 feet and since Williams was hoping to be gone in 2 years, one suspects there would not be too many buyers able to qualify and receive a refund from Williams.

By the end of 1895, there were a total of 42 drilled wells in the Township of Summerland, including the 3 drilled by Williams. 7 more were being drilled by the close of the year.

By contrast, when rigs appeared on the sands of Miramar beach, locals formed a vigilante committee. One night, they marched along the beach and tore the structure down.

The notion of developing the Santa Barbara Beaches was vigorously opposed. The Santa Barbara Daily Press editorialized:

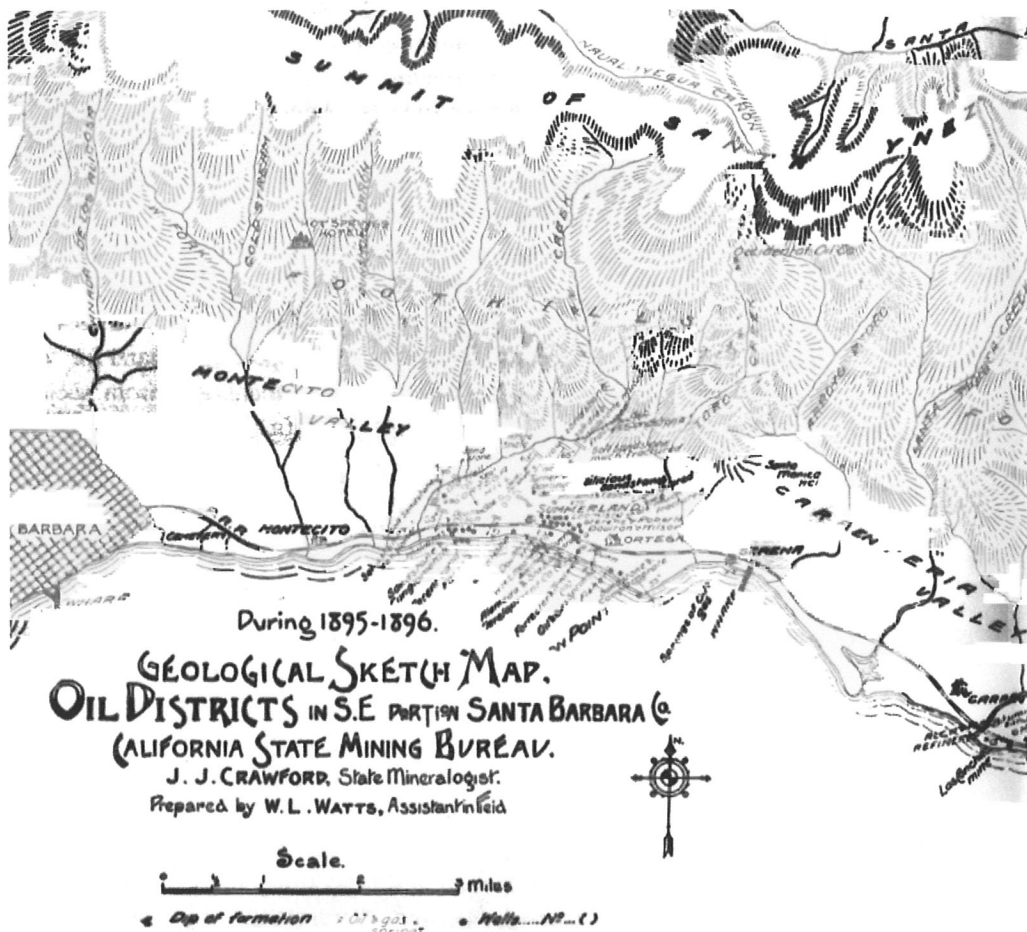
"It would be an unfortunate disaster if the beach front near Santa Barbara's waterfront should be disfigured with the ugly derricks of oil wells. An attempt to force these unsightly creations upon the shore beyond Castle Point should be met by united resistance on the part of the people as a whole and the individual owners of adjoining property."

Williams' Summerland accepted its oil field on the sandy shore. Other communities did not.

Advertisements for Summerland lots ran in the Santa Barbara Daily Independent in the Winter of 1895. First they read, "Keep your eye on Summerland," then after 2 months, they were changed to "Invest in Summerland Oil Lots - They Will Pay."

In 1896, W.L. Watts, Assistant in the Field to J.J. Crawford, State Mineralogist of the California State Mining Bureau studied the region's geology. His report, Bulletin No. 11 (December, 1896) noted that Williams had 6 wells on the sea shore, ranging 50 feet to 77 feet in depth. He also noted: "It is also evident that the oil yielding formations extend south into the ocean ... At low tide, springs of oil and gas are uncovered on the seashore."

Williams is one of several sources acknowledged by Watts in the letter of transmittal for Bulletin No. 11.



W.L. Watts, Geological Sketch Map
California State Mining Bureau, 1896

The wells on the sand were not easy to maintain. By 1896, Williams wells on the beach had gathered too much water. One had been flooded by a Winter high tide. Several required casing in order to keep out the sea water and continue pumping oil.

The local drillers then used a second layer of casing, called conductor, which was likely manufactured locally by the Darling Brothers Machine Shop, as a method of keeping the sea water out of the wells they drilled on the beach.

Williams was anxious to see the town quickly expand on oil speculation, helping him sell the lots and exit the venture with profit in hand. Oil men, including geologists and engineers, were arriving in town to join the expected boom.

Among them was a mining engineer for the Southern Pacific Railroad, John B. Treadwell. Treadwell along with William Forrester had 10 wells operating south of the railroad at Summerland, from 186 to 222 feet deep by the time of Watts' report of December, 1896, "each yielded 5 bbls. in twenty-four hours." Treadwell and Forrester sold their wells to Edwin Stevens, who operated them under the name Coast Oil Company, then Sunset Oil Company.

In September, 1897, Treadwell returned to the region. He registered at the Arlington Hotel in Santa Barbara. The plan to convert Southern Pacific's locomotives from coal to oil, a plan in which Treadwell had played a key role, had just been announced.

Now Treadwell and Southern Pacific had a new plan for Summerland.

Build a sea wharf connected to the railroad.

From the Railroad's perspective, a wharf would serve as a natural transfer point of shipping cargo as well as the opportunity to exploit the field for fuel demanded by its newly converted locomotives by constructing wells along the pier itself, extending into the ocean. Treadwell, operating for the Railroad, would use the double casing method to keep out the sea water.

The locals hadn't set out to solve the mystery of drilling into the ocean floor for oil. Instead, they had just solved the problem of keeping wells in operation that had been drilled too close to the sea tides. The small ingenuity that kept the beach wells in operation made the move into the ocean floor possible. Mr. Treadwell and the Southern Pacific Railroad were the first to take advantage of this ingenuity.

The Treadwell Pier at Summerland Field



Construction of Treadwell Pier
Huntington Library

On January 8, 1898, Treadwell Oil Co. published its Notice of Application for Franchise

"To build wharf from point opposite Carey Place in Town of Summerland, right to take tolls for 20 years and to construct a continuation of said wharf as a bridge (20 feet wide) over Cary Place to the southerly line of Railroad Avenue in Summerland."

The wharf would therefore have multiple purposes. First, it would serve as a wharf for docking and off loading. Second, its owner would have the right to charge tolls. In order to have a value for the taking tolls, the construction would include continuing the wharf as a 20 foot wide bridge over Cary Place to Railroad Avenue, which is the location of the Southern Pacific Railroad right of way.

Both the length and the width of the Treadwell Pier signal that it was designed as a shipping point, to transfer materials from vessels to either the shore or the rails of the Southern Pacific Railroad on the cliffs above.

On April 4, 1898, the bid of \$101 was accepted by Santa Barbara County. The wharf was to be built to a length of 1,230 feet, with a maximum width of 75 feet.

It was situated to the South of Carey Place (now abandoned). The Treadwell Oil Co. Pier, is identified on a "Map Showing All the Wells on the Water Front and in the Town of Summerland, Santa Barbara County, California, as Surveyed by F.F. Flourney, County Surveyor, Santa Barbara, California, July, 1901."

Treadwell Oil Co. was the trade name used by John B. Treadwell (1846-1931).



John B. Treadwell
Santa Barbara Historical Society

Treadwell, a mining engineer by profession, appears to have been point man for Southern Pacific Company's expansion into an ocean wharf and more importantly for developing oil wells to supply its newly converted locomotives. The Southern Pacific Company operated through a variety of subsidiaries, including the Southern Pacific Railway Company, the Central Pacific Railway Company, the Southern Pacific Land Company, the Southern Pacific Oil Company, the Southern Pacific Railroad Company, the Kern Trading and Oil Company and the Southern Pacific Transportation Company.

It is no coincidence that the year of Treadwell's application for a pier, 1898, was also the year in which the Southern Pacific line was finally connected from Los Angeles north to San Francisco.

It must have seemed an excellent opportunity, an ocean pier for unloading vessels, a rail depot for transfer, a shipping point for oil from the Summerland Field, and a wharf which could be used to anchor wells drilled into the ocean floor. These planned uses for the pier explain why it was constructed to a far greater length than any of the other piers built in the Summerland Field in the following years.

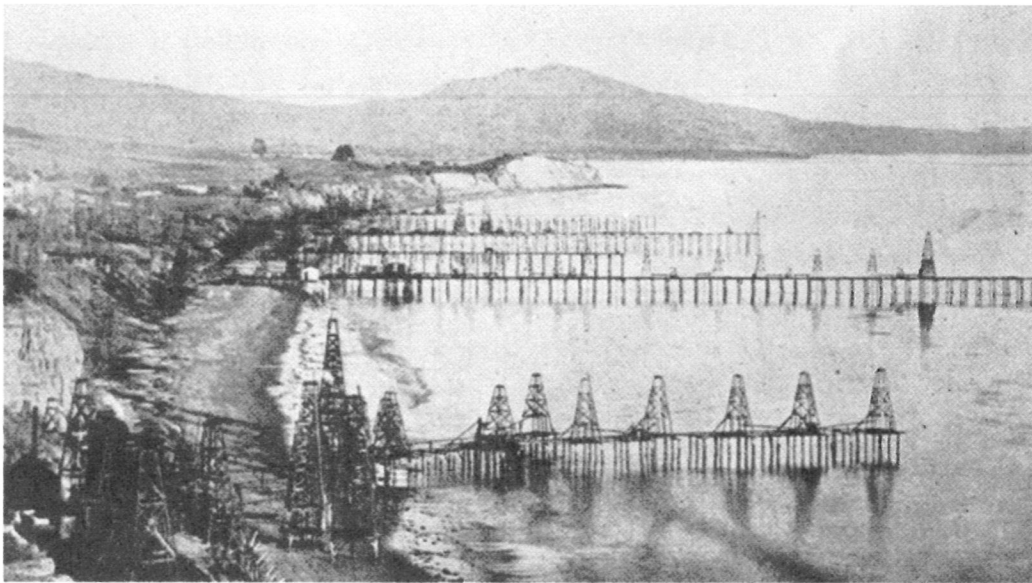
Southern Pacific's operation of an ocean wharf along its rail line had a precedent in Southern California.

In 1893, the Newport Harbor Railroad Company built the Newport Pier in Orange County, California. It used the pier as a shipping point, connecting by rail to Santa Ana, to carry lumber and other commodities brought by vessel to Newport. Southern Pacific purchased the Pier and line and operated it as a commercial shipping point as part of its rails service until it sold the Newport Pier to the City of Newport Beach for \$5,000 in 1924. On October 31, 1925, the City of Newport dismantled the rail lines which extended to the Pier.

Treadwell's application for a pier connected to the rail line took the precedent one step further, by adding wells onto the pier to provide oil for the newly converted railroad engines. At the time Treadwell's franchise application of April, 1898, was issued there were 2 other wharf franchises on this field, but neither had been built.

In the Spring of 1898, all of the conditions seemed right to proceed. Oil prices in Los Angeles had jumped to 90 cents a barrel. All of the oil produced in Summerland was sold as it was produced. Both the Southern Pacific and the Santa Fe railroads were converting their locomotives to oil. The Sea Cliff Oil Company struck oil on May 7, 1898, in a well just at the tidelands at a depth of 293 feet, confirming the local belief that a oil reservoir existed just beyond the tide water.

By June of 1898, 175 feet of the Treadwell Wharf had been completed. Wells were already operating as part of the Wharf.

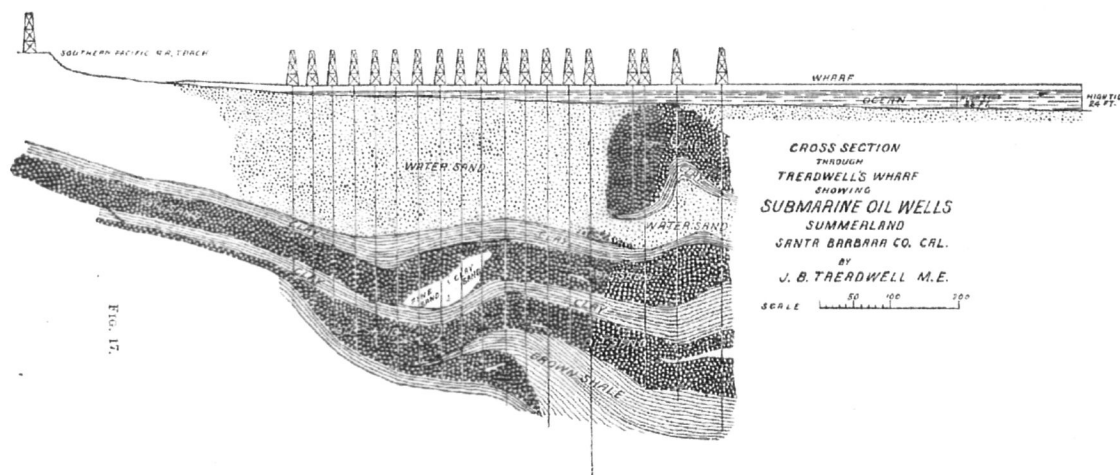


Summerland in 1899

Southern Santa Barbara County, published in 1900 by the Summerland Advance-Courier
Note the Treadwell Pier, which extends farthest off shore.

On July 8, 1898, oil was struck at a depth of 390 feet, 200 feet from the shore line on the Treadwell Wharf. Ott & Stephenson were the contract well drillers. This stratum had never been reached before. The flow was so strong that could not be controlled until it was capped, which was an unusual event in the Summerland Field.

By August, 1899, 18 wells at this wharf were yielding an average of 2 to 4 barrels of black oil a day of approximately 14° - gravity. The wells at the end of the wharf were less productive than those closest to the shore. Eventually, resting on wood pilings, the plank pier of Treadwell Wharf extended seaward as far as 1,230 feet.

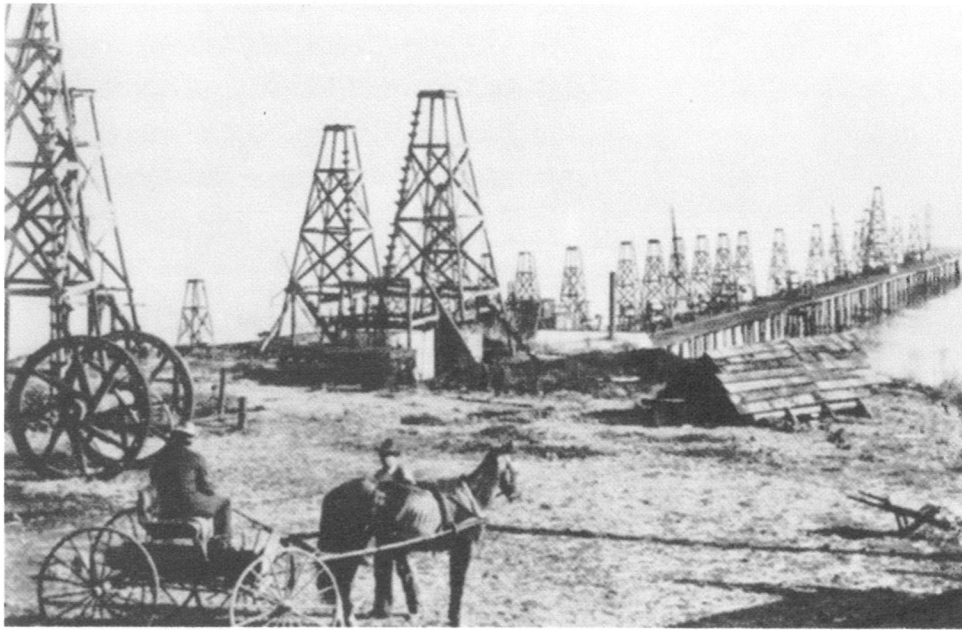


Cross Section through Treadwell's Wharf Showing Submarine Oil Wells
Prepared by John B. Treadwell, M.E.
Bulletin No. 16 (1899)

State Geologist W. L. Watts observed 19 wells on the J.B. Treadwell pier in March, 1900, as he reported in the California State Mining Bureau Bulletin 19 (November, 1900).

In the First Annual Report of the State Oil and Gas Supervisor, written following the formation of the California Division of Oil and Gas in 1915, Deputy Supervisor Robert B. Moran wrote:

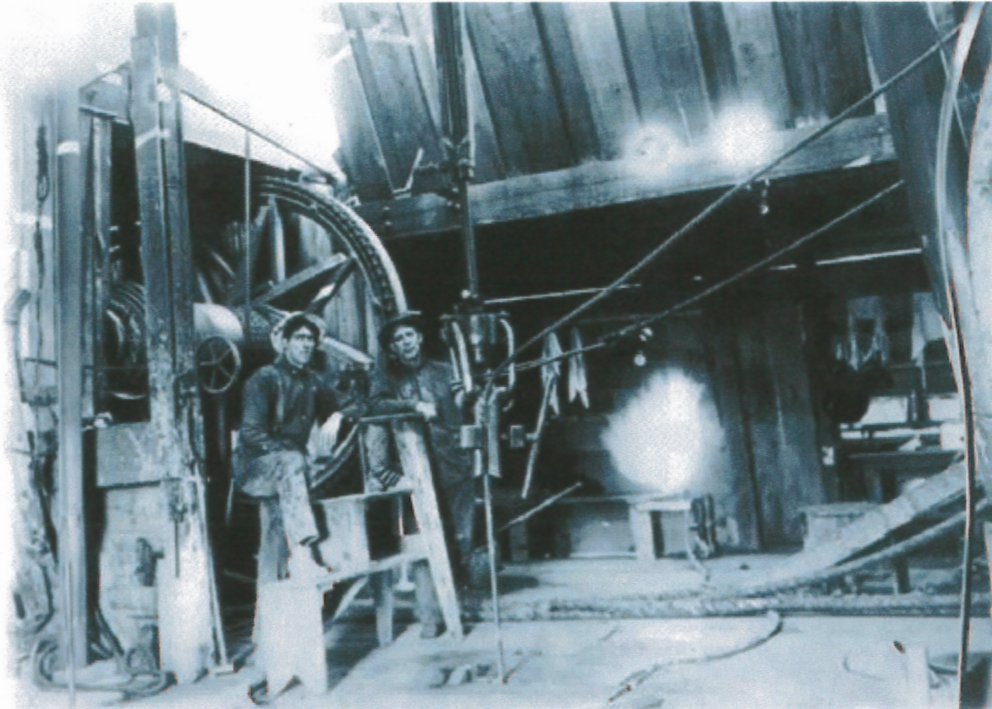
Drilling from the piers "was not such a difficult feat as might be supposed. The piers are light inexpensive affairs, owing to the fact that the channel waters are very quiet, there being almost no surf. The ocean water was excluded from the wells by driving casing into the clay beds overlying the oil sands. However, it is surprising that flooding has not been more rapid and complete than it was."



Summerland Field, Treadwell Pier 1902
Long Beach Public Library

Construction of Wells on Treadwell Pier

We'll look next at how these cable tool rigs lined with conductor casing were constructed. History has left us an excellent record.



Cable Tool Drilling Rig. Note the "yellow dog" lamp burning in the center of the photograph. It was one of many common safety hazards, which caused a high rate of fires and accidents at these types of wells.

Long Beach Public Library

First used by the Chinese 2,000 years ago to drill for brine which was then dried to produce salt, drilling with cable tools amounts to using a sharp tool, repeatedly pounded into the earth, to drill a hole. The tool is kept sharpened by a "tool dresser", a second man who worked alongside the driller. The tool dresser's job was to keep the cable tool sharp enough to continue its drilling.

A sharpened bit pounds repeatedly, on the vertical, into the earth. It is then removed. Water is dumped into the hold. The slurry is removed by bailing. Pounding with a sharpened bit resumes.

By the 1890's, steam powered engines were used to drive the cable tools into the rock and dirt. A wooden beam, called a walking beam, was balanced near its center. One end of the beam was attached to the cable tools.

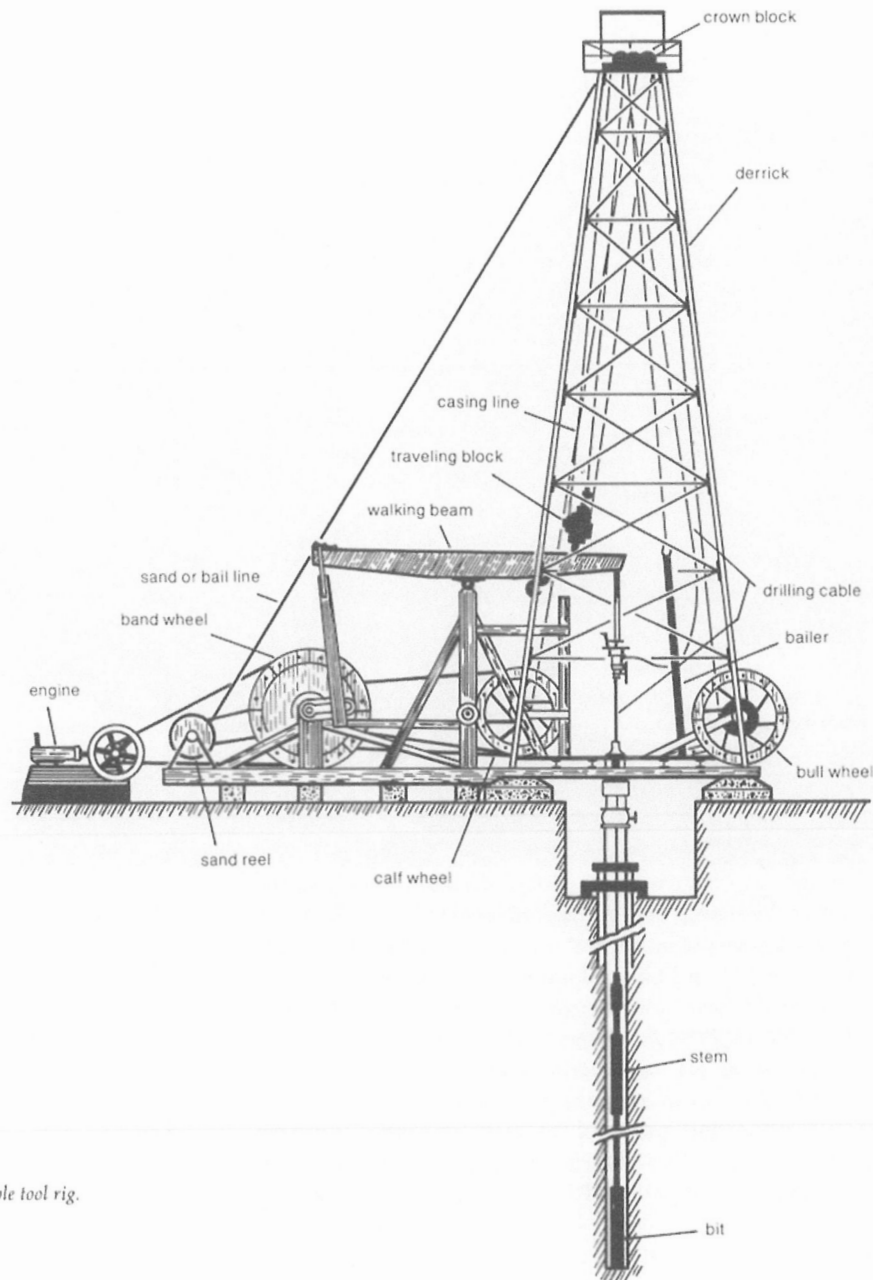
The other end of the walking beam was attached by a crank and rod, called the pitman, to a wheel, called the band wheel.

The steam engine rotated the band wheel. The band wheel caused the pitman to move up and down. The pitman drove the walking beam up and down.

The other end of the walking beam caused the cable tools to drill the hole.

In order to stop the cable tools and replace them with a bailer to slurry the hole, a cotter pin was pulled out of the pitman which disconnected the band wheel and the walking beam. It was all just a method of using a steam engine to drive a pick into the earth, to dig a narrow hole.

Digging with cable tools is the method used by Edwin L. Drake to drill in 1859. It remained the principal method of drilling until replaced by rotary digging in the twentieth century.



The standard cable tool rig.

Diagram of Cable Tool Rig

Cable tools were first powered by hand, then by horses, then by steam engines. The next step in the evolution of drilling was adding more than one well onto a single steam engine. Since many early wells were low producers (especially when gas had been blown off, reducing the pressure on the oil reservoir), it wasn't cost effective to purchase and operate a steam engine to dig and pump each well.

Jack lines were simple attachments that connected several lines to one engine. As illustrated below, the line was connected to a rocker or an "eccentric", which raised and

lowered the cable tools, usually 12 to 17 strokes a minute. Jack lines could extend as far as 1/2 mile between the engine and the well head.

The Summerland Wells were operated on jack lines.

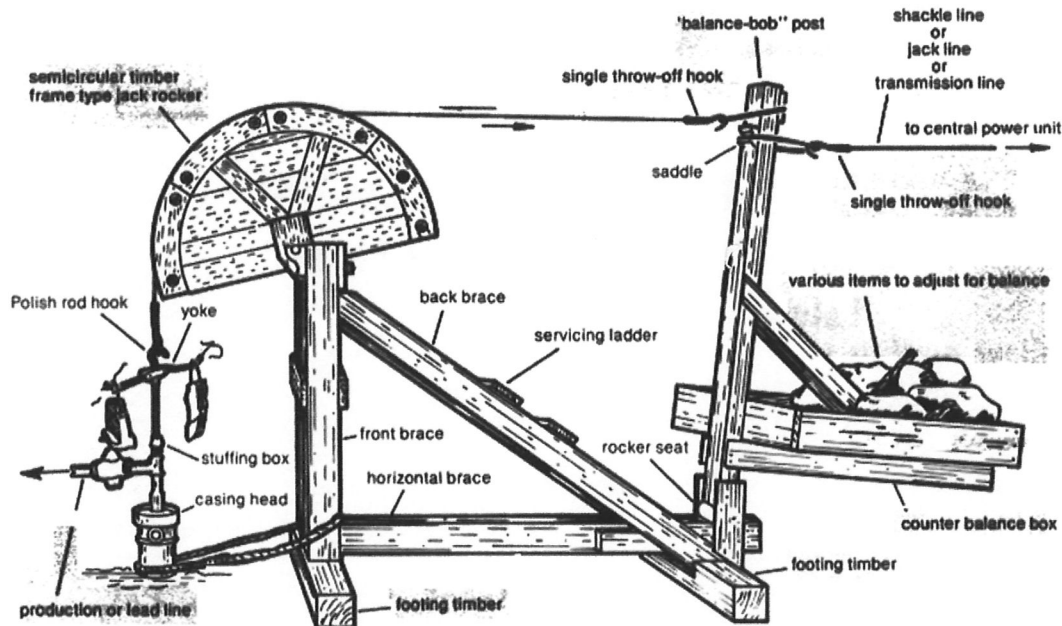


Illustration of Jack Line Pumping Unit

To seal the holes as they were dug, long sections of casing were driven into the hole. Originally, the most common was called stove pipe. It was made by folding over steel plates 2 or 3 feet in length and riveting the seams. This was normally thickened by using 2 sections of pipe, one fitting tightly inside the other. The drilling crew would then indent a section of pipe with a sledge hammer, to wedge one section into the next. The pipe was smooth on the outside, but sturdy enough for driving into the ground.

With the passage of time, stove pipe was replaced by longer sections of casing manufactured by machinists. A local machine shop operated near virtually every oil field. In Summerland, it was the Darling Brothers, discussed below.

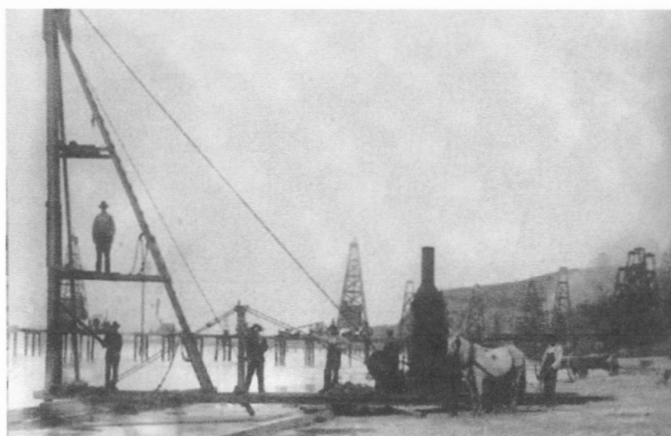
In digging the hole, the cable tools were run just below the casing, digging a hole for the casing to be lowered into. The base of the casing was sometimes fitted with a "shoe" which stabilized the casing as it was lowered.

W.L. Watts in Bulletin No. 19 (November, 1900) explained:

"6.1.3 In drilling beneath the water, a casing larger than that needed for the drill-hole is put down to the floor of the ocean and forced into the bedrock until the ocean water is securely shut out of the drill-hole. This is called a

conductor, and the casing of the well is put down inside of the conductor.”

“6.1.6 The depth of most of the Summerland wells ranges from 150’ to 300’. There are a few which are between 400’ and 500’ in depth, and there is one well which is 600’ deep. The cost of these wells is generally about \$1 a foot, not including the cost of casing.”



Pile Driving in the Summerland Field
Treadwell Pier is visible in background.
Santa Barbara Historical Society

The remainder of the article published on January 18, 1902, by Scientific American in New York City, describes in greater detail how the off shore wells in the Summerland Field were drilled.

"The drilling of submarine oils wells, as performed at Summerland, primarily involves the construction of a wharf from the shore to some point over the oil producing strata, or across the region where the borings are contemplated. In strength of structure these wharves have been built in considerable variety from those consisting of a mere double row of piles with 8 x 8 cross beams and stringers and with a narrow walk from one to five feet wide as the only means of access to the wells situated upon them, to strong and commodious structures thoroughly planked and capable of withstanding either the heaviest southeasters which visit that coast or bear any kind of traffic to which a wharf might be subjected.

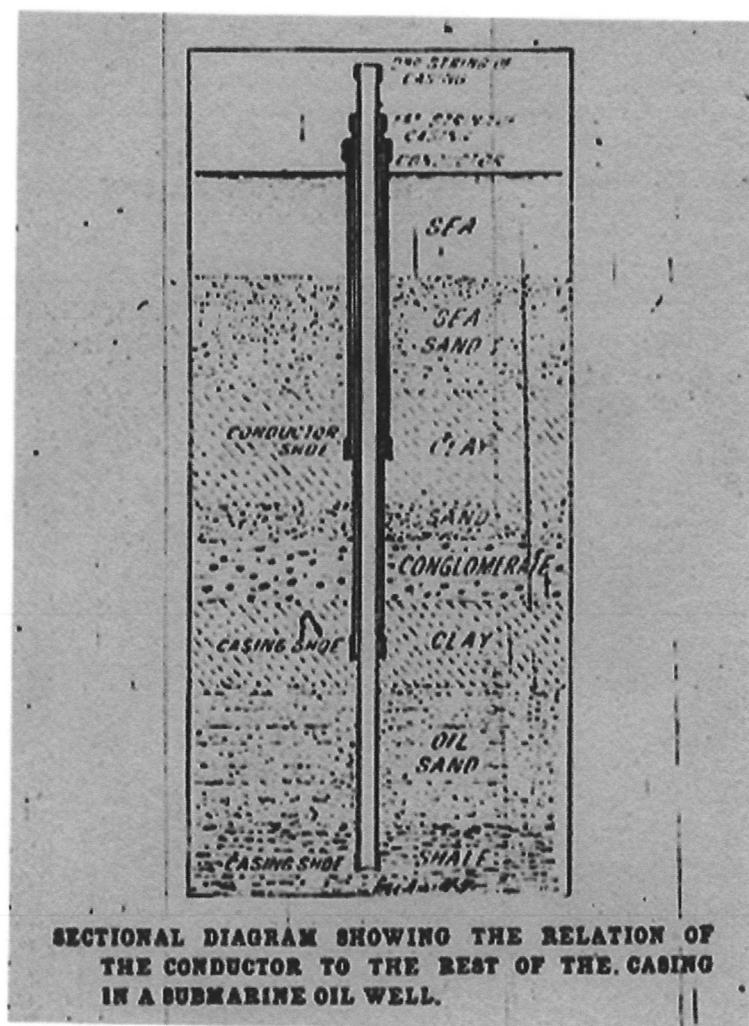
...

Upon completion of the wharf, or so much of it as is necessary for the immediate purpose, the drilling

machinery is assembled at the location for a well. In beginning the drilling operations the first important work to be done is in putting down what is locally termed a "conductor". The conductor consists merely of oil well casing of a size larger than that with which the well would have been started were there no sea to contend with. Often casing of inferior quality is used for this purpose, and it is sometimes put down without a shoe where the previous borings indicate that no cobblestones will be met in passing through the sea sand. Usually 9 5/8 casing is used but for the shallower wells 7 5/8 is sometimes adopted.

In starting the conductor in from 15 to 25 feet of water, two joints of 9 5/8 casing are screwed together making a length of from 30 to 45 feet or of sufficient length so that when the shoe or bottom is resting on the sand under the water, the top end will extend well up toward the top of the roof in the derrick. In setting it, the conductor is held suspended by the sand line in an upright position with the shoe about a foot above the sand. It is then plumbed as nearly as can be, and watching a favorable opportunity when the wash of the water is least violent, it is suddenly dropped to the sand. It is then accurately plumbed while resting on the ground under the ocean, and is secured in its vertical position by means of boards nailed to the derrick floor in such a way that their edges bear against the casing from four different directions. The drilling stem, which has been previously fitted with a driving head and clamps, is then run into the conductor and it is driven into the sand as far as it will go. Then the clamps are removed and the drill is set to work, and by alternate driving and drillings the conductor is worked through the sand to the clay beneath, where it is discontinued. By the time the top of the conductor has been driven to the level of the derrick floor the bottom end has become so deeply embedded in the sand that the stays can be removed and the casing driven beneath the derrick to a point near the level of the water underneath. Should it then prove too short to penetrate the sand, other lengths are screwed on and the operations continued until that object is attained. When the conductor has been driven a few feet into the clay underlying the sea sand, the ocean is as effectively shut off from the well for all practical purposes as if it was held back by a dike or sea wall. However, there is still danger of letting the ocean water into the well through the carelessness or incompetence of the driller. It is quite essential to change the drilling bit to the next smaller size immediately on stopping the

conductor or whenever it is decided to go no farther with any size of casing and also to keep the casing following closely after the drill. Otherwise, when drilling ahead of a conductor or casing that is permanently stopped, before reducing the size of the bit, there is danger of water breaking through from above into the new boring; and when drilling too far ahead of the casing the tools are liable to gain more and more swing, cutting the hole larger and larger, especially in either clay or shale strata, thus creating a cavity of much greater diameter than the casing will fill and which frequently becomes a water course outside of the casing for the ruin not only of the well but also of the adjacent oil territory. In other respects, the drilling of submarine wells differs little from those put down on land."



Relation of the Conductor to the Casing in the Summerland Field Submarine Oil Wells
Scientific American, January 18, 1902

The conductor and casing for these wells was in all probability produced at the local machine shop, which was the Darling Brothers Machine Shop, owned by brothers J. Warren and Stewart Darling on Wallace Avenue, Summerland, California. Their parents were one of the first families to settle in Summerland, in the Spring of 1890. The family was from Michigan. The brothers had spent five years in the lumber trade in Washington before their arrival in Summerland.

Their original shop was opened 1890. They later relocated to a larger building when their business grew along with the boom in oil production. (It was the Darling Brothers who had piped gas from their land in 1891, which they used for themselves and for 10 other families for heat, lighting and cooking.)



Darling Brothers' Machine Shop, The Original Shop

Note the pipe they display. Stewart Darling is at the left, J. Warren Darling is second from right. They produced pipe for both oil wells and the water system.

Carpinteria Valley Historical Society



Darling Brothers' Machine Shop, The Second Location [Just to the East on Wallace Avenue of the Becker Residence, Today the Big Yellow House] Wayne Darling, Will McIntyre, Jerome Potter, J. Warren Darling, Stuart Darling, unknown man.
Carpinteria Valley Historical Society

There were two significant differences between drilling a submarine well and drilling the same well on land at this point in time. The first, was assembling a length of conductor before any drilling was begun and sinking it vertically into the ocean floor at the start of drilling until it reached the clay stratum, what Ralph Arnold in Bulletin 321, Geology and Oil Resources of the Summerland District, Santa Barbara County, California (1907), United States Geological Survey, Department of the Interior, called the "persistent tough clay layer which appears to be almost completely impervious to the oil below and the water above it." The second, was driving the casing so that it closely followed the action of the cable tool while it drilled the hole.

Operation of the off shore wells included a technique called sanding. Arnold remarked that the beach and wharf wells "required frequent removal from the wells" of sand. "In fact, many of the wells pump considerable sand with the oil, the separation of the two being accomplished in a 'sand box.'"

W.L.Watts reported in California State Mining Bureau Bulletin No. 11 (December, 1896) that a "sand box is a wooden trough divided by four upright partitions, which run across it. At the top of the partitions are notches through which the oil passes, and the sand is deposited at the bottom. The oil is run into a tank, at the bottom of which a 10" space is allowed for any sand to settle which may still be in it."

"Sanding" the well was also done by periodically lowering a pumping tool into the well casing. The tool was then pulled up, bringing sand with it. This was called "sanding" or "pulling the well." While this was originally done with a crew of men, who

used block and tackle to hoist sand from the bottom of the well. By this era the use of horses had become common.

May Lambert recalled with sadness her husband Fred losing a team of horses from the Treadwell Pier when his hired man, George Rue, ran a team of Fred's favorite horses to sand the wells. One of the pair of horses got its tackle caught on the pier and both fell from the pier. The tide was out. With no water to soften the fall, both horses were killed.

From conductor to sanding, the construction and operation of the cable tool rigs on the Treadwell Pier has been clearly documented for us by reliable contemporaneous accounts cited above.

Ownership of Oil Reserves at Summerland Field

In the 1890's, other than this single field, there was no submarine oil exploration. Accordingly, there was no state and no federal regulation of off shore oil of any kind.

As reported in Bulletin No. 63 (1913):

“It was soon discovered that the dip of the sands was to the south, that is, toward the ocean, and drilling was rapidly carried on in this direction, first across the railroad, then to the beach under the bluff, and finally into the ocean itself. ***The beach, of course, was government property, and was grabbed by the first comers,*** so that here there were a large number of very small holdings, as was the case on the land side, where wells were drilled on town lots. At one time, there were upwards of one hundred operators in this small field, though this number is now diminished to about a dozen, by abandonment and by consolidation of properties.” [Emphasis added.]

Representative of the California State Mining Bureau visited the Summerland Field as part of their surveys of oil exploration. While they reported their observations in the Bulletins, they had no jurisdiction to oversee or regulate the oil fields.

The beach above high tide was in private hands. It belonged originally to Williams as part of his purchase of the Rancho Ortega.

Williams himself did not live to see the development of the Summerland Field off shore. When the Treadwell Pier was begun, Williams had relocated to San Francisco for medical care. After a period of ill health, he died in San Francisco on January 13, 1899, at the age of 58.

We would have expected Williams' estate to be inherited by his children and by his second wife, Agnes, who survived him and who married George F. Becker a year later. Court records indicate instead that the property was transferred to the mortgage holder, San Francisco Savings Union.

Summerland Spiritualist Association v Naomi Morgan et al., 225 Cal.App.2d 376, 37 Cal.Rptr. 366 (2nd District Court of Appeals, 1964), was a suit by the California Attorney General to enforce provisions of a Trust created by Williams in 1890, which deeded part of the Ortega Ranch to the Spiritualist Church. Williams' step daughter, Naomi Morgan, tried to invalidate the Trust, arguing that her family had retained possession and ownership. She offered into evidence a lease which her family had made to Ray Lambert, one of May Lambert's sons, as proof that the land had not been claimed by the Spiritualist Church for decades. The Court held in favor of the Spiritualists and

up-held the Trust. Of interest to our inquiry is the Court's finding that Williams' estate was not settled until 1929, 30 years after his passing.

That fact is instructive because on July 14, 1904, the California Supreme Court settled a law suit over control of the beach at the Summerland Field, finding in favor of the property owner, San Francisco Savings Union. San Francisco Sav. Union v R.G.R. Petroleum & Mining Co. et al., 144 Cal. 134, 77 P. 823 (1904). This case indicates that shortly after Williams' death in 1899, title to the Williams land transferred to Williams' mortgage holder.

The Santa Barbara County Surveyor, F.F. Flourney, had shown in his Map Showing All the Oil Wells on the Water Front and in the Town of Summerland dated July 1901, that Ortega Hill was claimed by San Francisco Savings Union, while the beach below it was claimed by R.G.R. Petroleum and Mining Company.

According to the California Supreme Court's decision in 1904, R.G.R. Mining Company built on the sand, "where the tide ebbs and flows" [at what is now the beach below Lookout Park] a platform 16 feet in width and 30 feet in length to extract oil. San Francisco Savings Union, the former mortgage holder now property owner, asked the trial court for an injunction.

R.G.R. Mining Company had no claim to the oil or to the location. It argued that since its platform was beyond the boundary of the land properly owned by San Francisco Savings Union, the oil in effect belonged to whoever pumped it.

To bolster its claim, R.G.R. Mining Company had secured a letter from the United States Secretary of War, which indicated there was no objection "to your dredging and boring wells for the purpose of developing petroleum in the Pacific Ocean below low-water mark, provided your operations are conducted in such manner as not to produce shoals on the water front or otherwise interfere with navigation."

The California Supreme Court did not find the letter persuasive of R.G.R. Mining Company's argument. It concluded "The Secretary of War cannot grant rights to lands owned by the state, nor can he deprive plaintiff [San Francisco Savings Union] of his property and rights by authorizing a stranger to take them."

The California Supreme Court found that as of 1904, the beach at Summerland belonged to San Francisco Savings Union, the ocean bed and oil reservoir below the low tide line belonged to the State of California. It further determined that R.G.R. could not trespass on the Bank's land above high tide to extract the state's submarine oil.

The California Supreme Court visited the subject of this same beach the following year, when it ruled on February 16, 1905, in Southern Pac. R. Co. v San Francisco Sav. Union et al., 146 Cal. 290, 79 P. 961 (1905). On this occasion, the Railroad was suing to condemn land for a right of way, in order to straighten the rail line.

The right of way was only on the bluff and did not include either the beach, the tideland, or the Treadwell Pier.

The land which the Railroad sought for its right of way on the bluff was owned by San Francisco Savings Union. This particular portion of the land was under contract to George F. Becker, who had married Agnes, the widow of Williams, and who had also bought up his remaining oil interests from his children and estate.

San Francisco Savings Union as owner and Becker as holder of the mineral rights argued that the condemnation of the right of way by the Railroad included not only the value of the possession of the land, but included as well the loss of opportunity to exploit its oil resources. The trial court sided with the Railroad. The California Supreme Court sided with San Francisco Savings Union and Becker.

The Court again confirmed that the bluff at Summerland Field was owned by San Francisco Savings Union. Again, the Court turned to no other body beyond the state courts to determine or decide ownership of mineral rights to the oil in the Summerland Field.

The Court ruled that oil under the right of way belonged to the land owner (the Bank) but had to be paid for by the Railroad to the extent the land owner was deprived of its use when the land was taken for construction and operation of the Railroad.

These cases demonstrate that the off shore wells were constructed below high tide in state marine waters. The oil extracted belonged to the State of California but was taken for free by the first to arrive, because there was no regulation of off shore oil. That would not change until the passage of the State's Tidelands Act in 1921.

The fact that the oil extracted from submarine wells could be taken from the state free of charge may have played a factor in the decision by Treadwell and others to move their wells off shore.

Later History of Summerland Field



Summerland Field, circa 1904
C.C. Pierce Collection
Title Insurance and Trust Co.

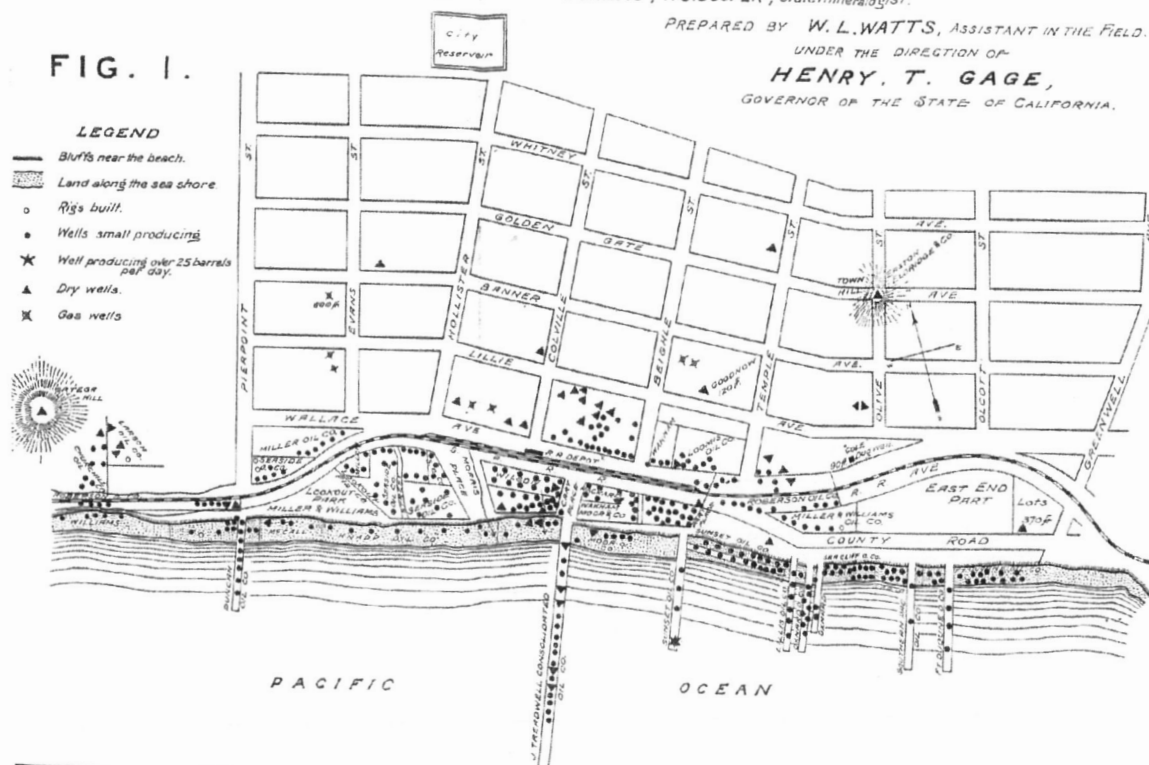
As would be expected in a limited reservoir, each year of production which followed the Field's peak in 1899 witnessed a decline.

In 1903, of the 412 wells that had been drilled in the Summerland Field, 198 wells were producing an average of 1.82 barrels a day per well. 100 wells had been abandoned. 114 wells were idle. Later in 1903, a storm battered the unstable wells, many of which were then abandoned.

The Summerland Field itself was drawing down. Production in 1900 was down 26% from the previous peak year of 1899. Reported production dropped in each successive year.

SKETCH MAP OF SUMMERLAND SHOWING OILWELLS AND WHARVES.
CALIFORNIA STATE MINING BUREAU, A. S. COOPER, State Mineralogist.

PREPARED BY W. L. WATTS, ASSISTANT IN THE FIELD.
UNDER THE DIRECTION OF
HENRY, T. GAGE,
GOVERNOR OF THE STATE OF CALIFORNIA.



Sketch Map of Summerland

Prepared by W.L. Watts

Bulletin No. 32 (March, 1904)

Note: Identifies Treadwell Pier as J. Treadwell Consolidated Oil Co.

By 1906 production was down 61% from 1899 peak production. The total production from the Summerland Field from 1895 to 1906 (excluding 1896 for which no figures are available) was 1,373,989 barrels.

The Treadwell Pier was not used for the delivery of oil to tankers, but was used primarily for the delivery of materials for construction of the piers. Most of the oil product was consumed locally, and never made its way to the San Francisco area. The field never proved to be as rich a find as was expected. From 1900 on, attention rapidly moved from Summerland to the Kern County Field, which proved an enormous reservoir. In the rush for "black gold", the Summerland Field was left behind.

Some of the oil produced in the Summerland Field was processed locally into asphalt. Santa Barbara Asphalt Company operated until 1901, when it was destroyed by fire. California Liquid Asphalt Company operated a refinery in the Summerland Field until 1910 where some of the production was sold. The remainder of the oil was shipped by rail to Los Angeles, Oxnard and Santa Barbara for fuel. After California Liquid Asphalt ceased production, B.S. Bennett Refining Company constructed a plant which

used roughly half the output of the field for the production of asphalt, with the remainder again shipped to Santa Barbara as fuel and for road oiling.

There is no record of operation of the Treadwell Pier transferring to any party other than Southern Pacific Railroad.

There were later explorations done to greater depths, but none on the Treadwell Pier. George F. Becker persuaded George F. Getty Inc. to drill a well to a depth of 5,041 on Temple Street. It proved unproductive. Lincoln Drilling Company drilled on the sand to a depth of 1,417 feet. The well completed 300 barrels before it too was abandoned. Wells were also drilled to greater depth on the pier operated by Seaside Petroleum (through mergers known today as Phillips Petroleum), according to Bulletin 118 (April, 1943), but also proved unsuccessful.

Deputy Supervisor Moran of the California Division of Oil and Gas wrote in his report in 1915:

"Wells wrecked by a storm a number of years ago were never repaired. In 1912 broken casing could be seen under the water with small quantities of oil and gas continually escaping. The field is also of note in that operations are continued, notwithstanding the very low production per well, which only amounts to 1.03 barrels per day. This is due partly to the fact that there is a local market for the product and also the fact that operating costs are very low. The wells are shallow and very close together and a large number can be operated from one power."

Production continued until 1939. S.G. Dolman, District Deputy for District 3, Division of Oil and Gas reported in the Twenty-Fifth Annual Report of the State Oil and Gas Supervisor that high tides and storms destroyed the last shallow well in the ocean at Summerland Field, bringing to an end its production.

In hindsight, this was never a large oil field. Treadwell No. 10, drilled in 1898 to 392 feet, produced an average of 4 barrels a day after its initial flow. Luton-Bell No. 1 in the Elwood Field in Santa Barbara County, drilled in 1928 on a bluff over looking the ocean to 3,208 feet produced an average of 4,300 barrels a day.

To compare the Summerland Field with the Caddo-Pine Island Field in Southern Louisiana, the Summerland Field produced a total of 1.4 million barrels in all of its peak years combined, the Caddo-Pine Island Field a total of 369 million barrels and is still producing today.

A separate reservoir was tapped on November 18, 1958, when Standard-Humble Summerland State No. 1, situated 3 miles off the coast of Summerland, at a depth of

7,531 feet began flowing 865 barrels per day of 36 gravity oil. This was the first off shore find made at sea in California. All prior off shore explorations had begun on land and followed a reservoir into the ocean floor. The platform was decommissioned in 1996 by Fairweather E & P (today Fairweather Pacific LLC) under contract with the California State Lands Commission, Mineral Resources Management Division.

Ownership of the Treadwell Pier and Its Wells

After the discovery of the Kern County Oil Fields in 1900, Treadwell relocated there. In the Kern County Field, Southern Pacific Company operated wells through its newly founded subsidiary, the Kern Trading and Oil Company.

"Plaintiff Kern Trading & Oil Company was incorporated in 1903 by the Southern Pacific Company as its agent and instrumentality for the purpose of developing, handling, and furnishing to it fuel oil for its locomotives. The Southern Pacific Company also owns all the stock of the Kern Trading & Oil Company, except 25 shares held by the directors of the latter. The Kern Trading & Oil Company does not sell and has never sold any oil commercially, but all of the oil developed or acquired by it is and has been devoted to the use of the Southern Pacific Company for its railroad purposes. The Southern Pacific Company has advanced all the moneys, in amount more than \$9,000,000, necessary for the Kern Trading & Oil Company, and all of the oil handled by the latter has been developed upon lands owned or controlled by the former." Kern Trading & Oil Co. v. Associated Pipe Line Co., 217 F. 273 (D.C.Cal. 1914).

It does not appear that Treadwell returned to Summerland. Instead, later records show the wells on the Treadwell Pier were operated by the Kern Trading & Oil Company.

With the exception of the County Surveyor's Map of 1901, government maps from the time and later historians, both of local history and petroleum history, have referred to the Treadwell Pier as the Southern Pacific Company's Pier and Wells. It is evident that Treadwell acted as an agent for the Southern Pacific Railroad when he secured a 20 year Franchise from the County of Santa Barbara, constructed the Pier and operated its wells..

See e.g. Ralph Arnold, Geology and Oil Resources of the Summerland District, Santa Barbara County, California, Bulletin 0321, 93 (1907), United States Geological Survey, Department of the Interior, which identifies: "Treadwell (Southern Pacific Company) well No. 15 encountered gas in hard shale at a depth of about 600 feet ..."; "Treadwell (Southern Pacific Wharf), 15° to low north dip ..."

See also Early California Oil, a Photographic History 1865-1940, Kenny Franks and Paul Lambert, Texas A&M University Press (1985) at 46: "One pier, constructed by the Southern Pacific Railroad, reached 1,230 feet into the ocean. The wells farthest from shore were in fifteen to twenty-five feet of water at high tide."

See also Spudding In, Recollections of Pioneer Days in the California Oil Fields, William Rintoul, California Historical Society (1976) at 207: "The Southern Pacific Railroad built the longest of the piers, 1,230 feet to get in on the drilling boom."

Co. As explained above, the California Supreme Court determined in 1904 that R.G.R. had no lawful claim and was only a trespasser, taking oil from tide lands that belonged to the State of California. Flournoy's Map by itself would reflect the parlance of the region, not the record owners.

Bulletin No. 63 (1913), records:

“The longest wharf, 1230 feet, was that of the Southern Pacific Railroad Company, and the wells farthest out on this wharf were at least as productive as those closer to shore so that development in this direction was not limited by a failure in the productiveness of the sands. But the wharves suffered severely during the winter, and were found difficult to maintain through the stormy period, the wrecking of wharves broke off casings below water level and admitted great quantities of ocean water to the sands, and the production per well was so small that the cost of operation prohibited further extension in this direction, indeed it is very doubtful whether, in most cases, the original cost of these wharves and lines of wells was ever repaid. The drilling of wharf wells therefore ceased about the year 1899, and several of the wharves have entirely disappeared, though on such as remain most of the wells are still being operated.

“The depth of the Summerland wells varies considerably, though all are very shallow as compared with the depths reached in other fields. North of the railroad, some of the wells were as little as sixty feet, and none were over 160 feet. Between the railroad and the beach depths ranged from 150 to 250 feet, while on the beach and the wharves most of the wells were about 250 feet on the land side, deepening to about 450 feet in the wells farthest out. A single well on the Southern Pacific wharf was drilled something over 600 feet, finding gas below the oil sands.”

Similarly, Bulletin No. 69 (October, 1914), records the 8 Companies operating in the Summerland Field in 1914. It notes “The producing wells are pumped from piers extending out into the ocean.” It lists the Kern Trading and Oil Co. as operating 10 wells. It then explains “The Kern Trading and Oil Company is a subsidiary of the Southern Pacific Railway Company ...” At that time, the remaining operators were George Appel, George F. Baker, Benjamin Bennett, Duquesne, J.C. Lillis, Sunset and Seaside (later merged into Phillips Petroleum).

In 1926, Standard Oil Company of California merged with Pacific Oil Company, then the name for the Oil Divisions of Southern Pacific Company. The merged entity

was incorporated in Delaware as Standard Oil Company of California. On July 1, 1984, the firm changed its name and is known today as Chevron Corporation, and soon ChevronTexaco Corporation.

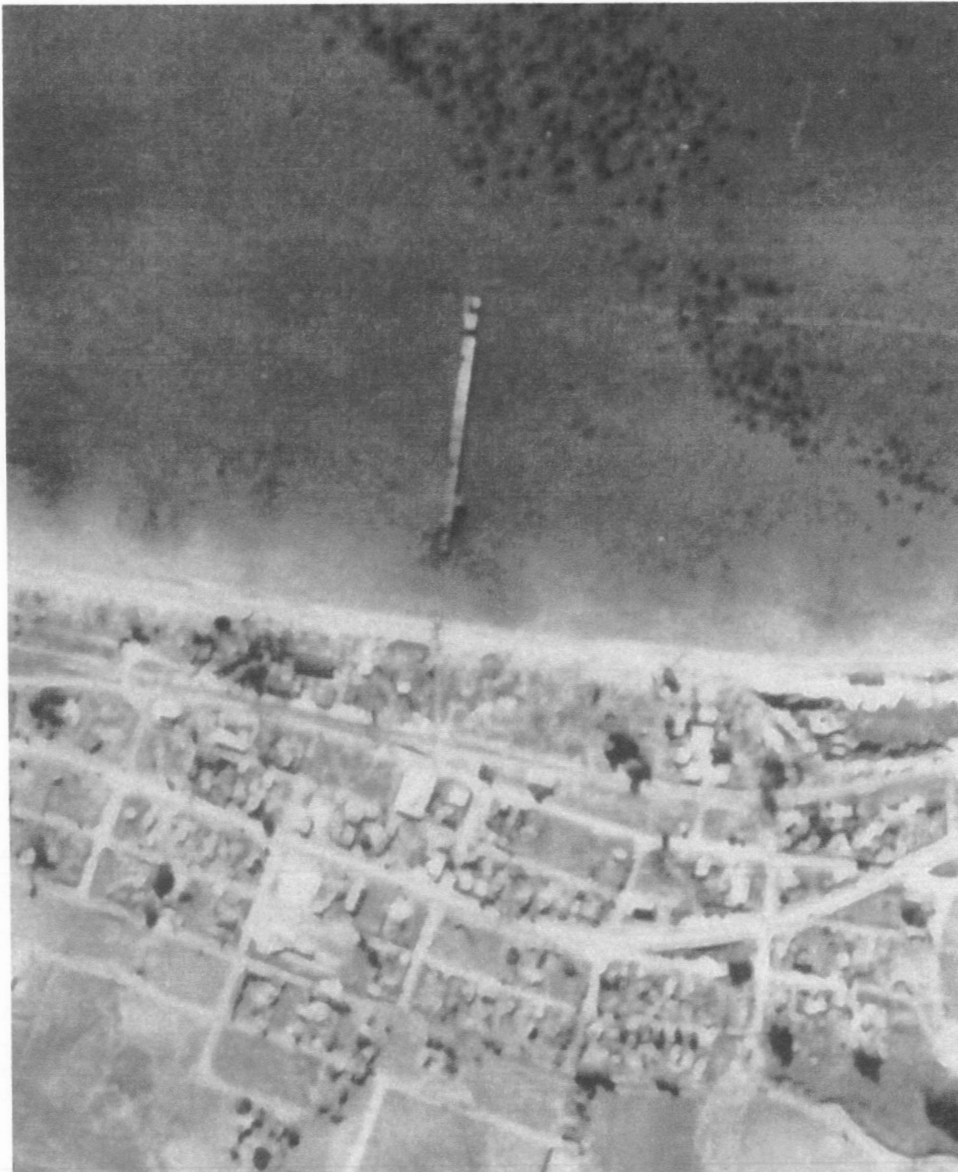
The Treadwell Pier belonged to the Southern Pacific Company as one of its oil holdings. Ownership of the Treadwell Pier passed from the Oil Division of Southern Pacific Railroad to Standard Oil Company of California (today's Chevron Corporation) as part of the merger in 1926.

At the time of the Standard Oil Company merger with the oil division of the Southern Pacific Company in 1926, and for perhaps another 2 decades, the Treadwell Pier was still standing, a tribute to the railroad engineers who designed and built it.



Treadwell Pier, 1928

Photographic Archives, University of California at Santa Barbara



Treadwell Pier, 1938

Photographic Archives, University of California at Santa Barbara

By 1938, we can see that the other piers have disappeared from the action of the ocean waves. The Treadwell Pier was still standing.

Seven decades after the oil division of Southern Pacific Company was spun off in 1926, the Southern Pacific Company and the Union Pacific Company merged on September 11, 1996, forming the largest railroad in the United States. The company now operates as the Union Pacific Corporation. Had the Treadwell Pier for some reason been explicitly excluded from the Southern Pacific Oil Division merger into today's ChevronTexaco, perhaps as a right of way holdings for the Southern Pacific Company, then title to it would have passed to Union Pacific Corporation. Title documents for Southern Pacific Company's right of way holdings however do not reference the extended oil holdings along the beach or below the high tide line.

Conclusion

As reported in Bulletin No. 63 (1913):

“It was soon discovered that the dip of the sands was to the south, that is, toward the ocean, and drilling was rapidly carried on in this direction, first across the railroad, then to the beach under the bluff, and finally into the ocean itself. *The beach, of course, was government property, and was grabbed by the first comers*, so that here there were a large number of very small holdings, as was the case on the land side, where wells were drilled on town lots.”
[Emphasis added.]

At Summerland they followed the oil from the hills to the sandy shore and on into the sea. They learned how to keep wells pumping on the sand. To create a pier for the Railroad, they built a wharf into the ocean. Unlike the other piers in the Field, they built it so well it lasted more than 40 years when other piers had washed away.

They were most likely backed by Railroad money. They certainly had Railroad backed ingenuity and engineering.

They were not impeded by government regulation or over sight, either state or federal. They didn't have the Nobel Brother's money behind them, but they didn't have the Agricultural Scientific Committee of Ministry of State Property in Moscow to slow them down.

They had a machine shop on the bluff and a railroad as well. They had local markets for their product.

They had a motivation not just to make money from oil, but to use oil discovery as a way of making money on the sale of their land.

They had money troubles that pushed them even harder to find oil to enhance the value of their land, even if it meant looking off shore.

And once they found it, they had oil free for the taking.

Understanding these factors, it now seems logical that off shore oil development would begin in the Summerland Field.

At the same time, it is worthwhile to pull back and remember the bigger picture. That these factors came together in Summerland, California and in no other place to cause off shore oil exploration anywhere on the globe for 13 years, in few other places in the world for more than 30 years. The off shore wells of the Gulf of Mexico are sometimes casually referred to in petroleum literature as the first off shore field. They were first built half a century after the Summerland Field had a submarine well pumping oil on the Treadwell Pier.

Bibliography

Almost Heaven, A Walk Through Old Summerland, Myrna Davis and Mary Holzhauer, McNally & Loftin (1997)

California State Mining Bureau

Bulletin No. 11, Oil and Gas Yielding Formations of Los Angeles, Ventura and Santa Barbara Counties, W.L. Watts, M.E. (December, 1896), Bulletin No. 16, The Genesis of Petroleum and Asphaltum in California, A.S. Cooper (December, 1899), Bulletin No. 19, Oil and Gas Yielding Formations of California, W.L. Watts, M.E. (November, 1900), Bulletin No. 32, Production and Use of Petroleum in California, Lewis E. Aubry (March, 1904), Bulletin No. 63, Petroleum in Southern California, Paul W. Prutzman (1913), Bulletin No. 89, Bulletin No. 69, Petroleum Industry of California, R.P. McLaughlin (October, 1914), Bulletin No. 73, First Annual Report of the State Oil and Gas Supervisor of California for the Fiscal Year 1915-1916 (1917)

Caddo-Pine Island Oil and Historical Museum

Oil City, Louisiana

State Museum, State of Louisiana

URL: <http://members.aol.com/CaddoPine/MusInfo.htm>

California Division of Oil and Gas

801 K Street, MS 20-20

Sacramento, CA 95814-3530

<http://www.consrv.ca.gov/dog/index.htm>

Carpinteria Valley Museum of History

956 Maple Avenue

Carpinteria, CA 93013 805-684-3112

Cumulative Socioeconomic Impacts of Oil and Gas Development in the Santa Barbara Channel Region: A Case Study. Centaur Associates, Inc. funded by the Pacific OCS Region, Minerals Management Service, U.S. Department of the Interior under Contract No. 14-12-0001-30026 (August, 1984)

Deed from H.L. Williams to Trustees for Town of Summerland recorded August 9, 1890, in the Office of the Santa Barbara County Recorder's Office

Drake Well Museum

RD #3

Titusville, PA 16354

URL: <http://www.usachoice.net/drakewell/>

Drilling Through Time, 75 Years with California's Division of Oil and Gas, William Rintoul, California Department of Conservation, Division of Oil and Gas (1990)

Early California Oil, a Photographic History 1865-1940, Kenny Franks and Paul Lambert, Texas A&M University Press (1985)

Fairweather Pacific, LLC, Summerland Well Research Project, (2000)

Gaviota Offshore Gas Fields, Tom Giallonardo and Adelbert Keller, California Division of Oil and Gas Publication No. TR21 (1978)

The Great Oil Age, Peter McKenzie-Brown, Gordon Jaremko and David Finch, PMB Communications Ltd. (1993)

Growing Up With Summerland, May Lambert, Carpinteria Valley Historical Society (1975)

Kern Trading & Oil Co. v. Associated Pipe Line Co., 217 F. 273 (D.C.Cal. 1914)

Map Showing All the Wells on the Water Front and in the Town of Summerland, Santa Barbara County, California, as Surveyed by F.F. Flournoy, County Surveyor, Santa Barbara, California, July, 1901

Offshore Energy Center
Galveston Pier
Galveston, TX
URL: <http://www.oceanstaroec.com/>

Oil & Gas Museum
P.O. Box 1685
119 Third Street
Parkersburg, West Virginia 26101
URL: <http://little-mountain.com/oilandgasmuseum/>

Russian Empire in Photographs, URL: <http://all-photo.ru/empire/index.en.html>

Santa Barbara Historical Society
136 East De la Guerra Street
Santa Barbara, CA 93101 805-966-1601

San Francisco Sav. Union v R.G.R. Petroleum & Mining Co. et al., 144 Cal. 134, 77 P. 823 (1904)

Santa Paula Union Oil Museum
1001 East Main St.
PO Box 48
Santa Paula, CA 93060
URL: <http://www.oilmuseum.net/>

Scientific American (November 27, 1897, September 14, 1901, and January 18, 1902)

Southern Pac. R. Co. v San Francisco Sav. Union et al, 146 Cal. 290, 79 P. 961 (1905)

Southern Pacific Railroad Annual Report (1894)

The Spirit of the Big Yellow House, Rod Lathim, Emily Publications (1975)

Spudding In, Recollections of Pioneer Days in the California Oil Fields, William Rintoul, California Historical Society (1976)

State of California, Department of Natural Resources, Division of Mines, Geologic Formations and Economic Development of the Oil and Gas Fields of California, Olaf P. Jenkins (April, 1943)

Story of Offshore Oil, Harry Edward Neal, Simon & Schuster (1977)

Summerland Advance-Courier

Summerland The First Decade, David F. Myrick, Noticias Quarterly Magazine, The Santa Barbara Historical Society (1988)

Summerland Spiritualist Association v Naomi Morgan et al., 225 Cal.App.2d 376, 37 Cal.Rptr. 366 (2nd District Court of Appeals, 1964)

Texas Energy Museum
600 Main St.
Beaumont, TX 77701
URL: <http://www.texasenergymuseum.org/>

U.S. Atlas (1895)

United States Geological Survey, Department of the Interior
Bulletin 321, Geology and Oil Resources of the Summerland District, Santa Barbara County, California, Ralph Arnold, (1907)